

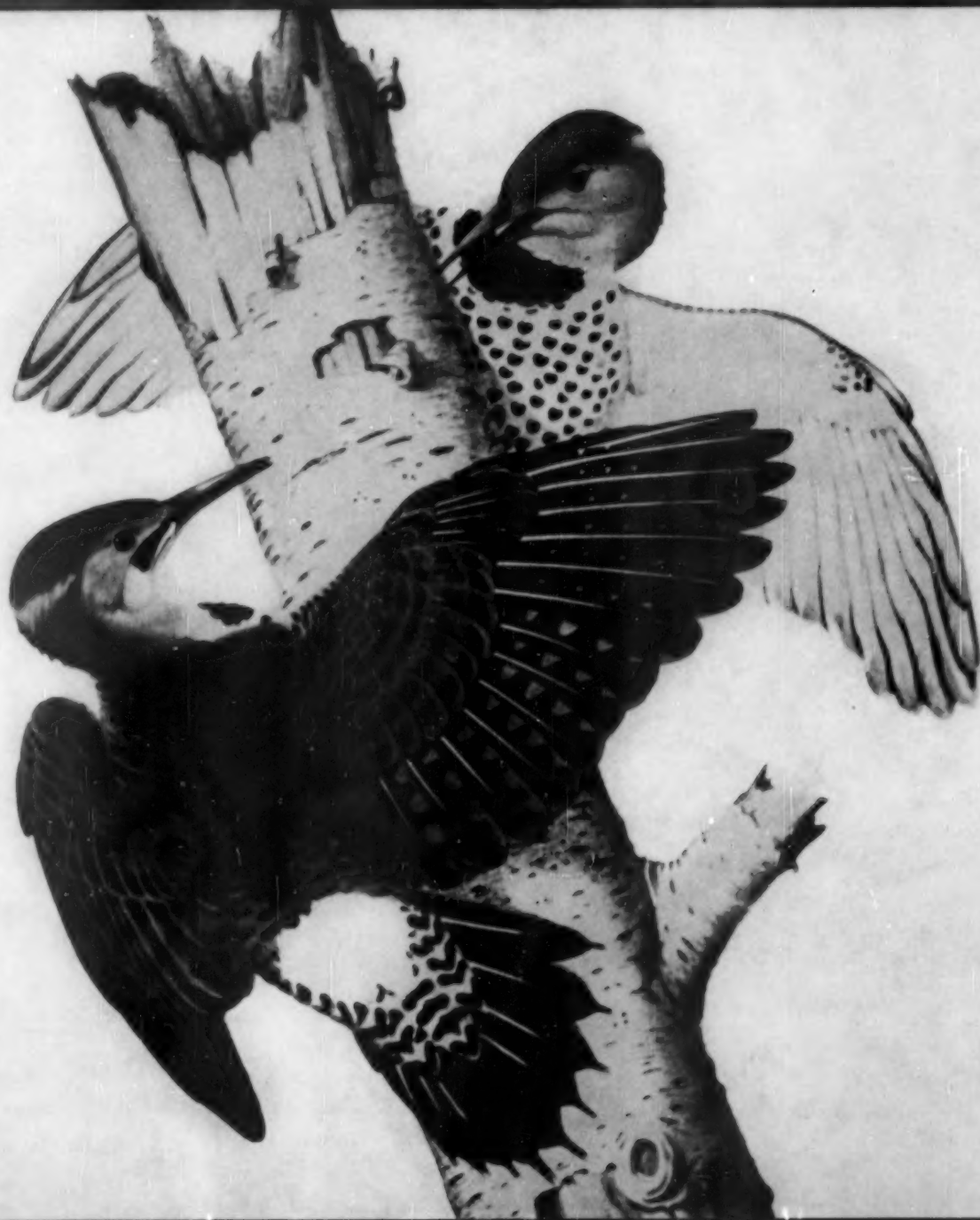
Audubon

MAY-JUNE 1956

Magazine

FIFTY CENTS

PUBLISHED BY THE NATIONAL AUDUBON SOCIETY





DR. ERNEST P. EDWARDS is vice president and member of the board of directors of the Foundation for Neotropical Research. He has traveled extensively in Mexico and Cuba and, while on these trips into the tropics, has recorded with motion picture camera the most interesting features of the natural history and the people of these regions.

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Audubon magazine

Volume 58, Number 3, Formerly BIRD-LORE

PUBLISHED BY THE NATIONAL AUDUBON SOCIETY

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Letters

Preventing Fungus Infection at Bird-Feeders

Your recent note in the letters column of *Audubon Magazine*, January-February 1956 issue, about the fungus infection of birds at feeders, was interesting and thought-provoking. Some time ago, I raised exhibition Bantam chickens and became aware of the susceptibility of fowls to parasites and diseases.

All of my hanging bird feeders I have made with bottoms of fine, screen wire, supported, if necessary, with hardware cloth. This eliminates the danger of wet feed, and the consequent danger of infection from the fungus, *Aspergillus*. Fine seeds drop through to the ground and are eaten by birds.

It takes a tremendous number of birds to contaminate the soil with their droppings, but the accumulations of chaff of the sunflower seeds under feeders becomes a problem. Here they attract mice and shrews that make burrows near the foundation of our house. These holes cause flooding of the cellar in rains and are our main bird-feeding hazard.

The birds that feed in the trays with the wire bottoms are always healthy. If the feeders are many, and scattered about the yard, there is less danger of accumulations of wet feed on the ground. I believe that nearly everyone puts out too much feed at a time.

MORTIMER F. BROWN

Westport Audubon Society
Westport, Connecticut

We use a tray suspended under our feeders in our Long Island bird sanctuary, which catches the chaff from sunflower seeds, millets, etc. We simply empty this on our compost pile occasionally and find that it prevents the accumulation of the chaff on the ground. The tray we suspend with two chains, one of which is attached to each side of it, and the other ends we attach to hooks that we have put in the wood work of the house. The "catch tray" is easily rigged up under window shelf feeders at the house, and I believe could be easily improvised for any of the suspended feeders in the garden.—J.K.T.

Guidance in Iceland

Before going to Iceland last summer, I wrote you for information on Icelandic birds. You were kind enough to send me a sample copy of the January-

February 1954 issue of *Audubon Magazine* with the excellent article, "Birding in Iceland," by Ralph E. Case. It was very helpful.

In northern Iceland, at Akureyri, I met an American couple from Greenwich, Connecticut, and their constant companion was the same issue of your magazine I was carrying.

LOUISE TRAVELSTED
East Orange, New Jersey

Diet for a Sparrow Hawk

We picked up in July 1955 a young female sparrow hawk and nursed her along nicely until September of that year when she was finally enticed out of the window by another kestrel. This was just in the nick of time because my wife had just had our first baby, and in a two-room apartment things would have been somewhat crowded.

I was particularly pleased with our success. Believe me, it had a diet that bordered on the fantastic. Chicken and beef liver, raw lean beef (usually steak) coated with oleum percomorphum, and cuttle bone. Added to this were insects which happened to get into the apartment and expose themselves to the hawk's sharp eyes.

Perhaps most amazing to me was that she grew in one of her three tail feath-

ers, which was missing when we found her. Though she was quite sociable (and clean—she took at least one bath a day in a fruit dish provided for her) she was almost driven frantic when anyone wearing eyeglasses entered the room. Incidentally, roughage, which I knew she needed, but was worried about getting, was conveniently provided by our parakeet that continually molted. This along with white wool, and hair, that she seemed to enjoy pulling out of our heads, and other indigestible items did her fine. She even developed a liking for grapes!

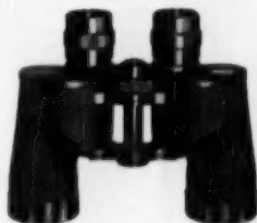
In all, she provided a wonderful ex-



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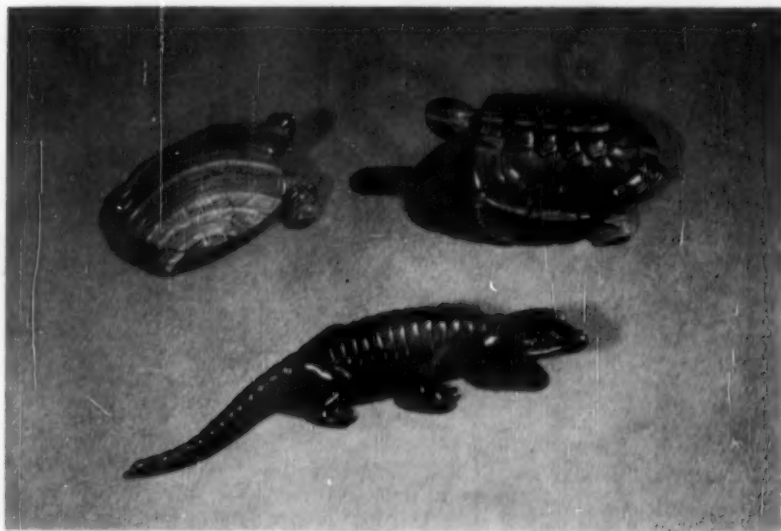
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perience for us and also helped me to "educate" some of my skeptical friends, particularly those to whom the noun "hawk" was synonymous with John Dillinger.

CORNELIUS J. WARD

Astoria, L. I., New York

Chipmunk Friends

I've had a lot of fun with the chipmunks, having them race upon my knees for peanuts, and taming them. My experiences were greatly enhanced after reading "The World of a Chipmunk," by Alan Devos, in the January-February 1956 issue of *Audubon Magazine*. We have more than a dozen chipmunks right outside our door. We have a lot of fun watching them. They eat a great quantity of peanuts—but they're worth it!

BENNIE DAHL

Pontiac, Michigan

CORRECTION

One of our readers has called our attention to a statement on page 74 of an article, "Why Preserve Natural Areas?" (*Audubon Magazine*, March-April 1956 issue), which is in need of correction. The reader has written us as follows:

"It was there stated that protection of the Sunken Forest on Fire Island, New York, was 'an immediate aim of the Nature Conservancy' of Washington, D. C.

"This, we regret to say, is contrary to fact. Any connection which the Nature Conservancy had with the Sunken Forest was severed in 1954 and at no time has the Nature Conservancy afforded the Forest any protection.

"Since June 1955, such protection has been solely the function of the Sunken Forest Preserve, Inc. (James N. Dunlop, President), incorporated for that purpose, and operating entirely free from any connection with any other conservation group."—The Editor.

• • •

TRUMPETER SWANS FROM CANADA SIGHTED IN IDAHO

An identification band from a dead trumpeter swan found in the Island Park area of eastern Idaho last summer has led to definite proof of the intermingling of Canadian and American flocks of trumpeters, the U. S. Fish and Wildlife Service announced recently. The mixing of these flocks has long been suspected but hitherto unproved. Positive evidence was gotten when an in-

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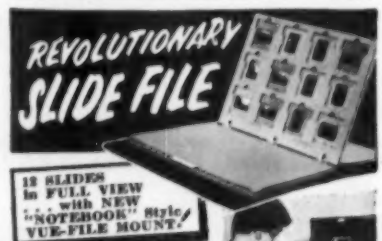
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spection of the wintering grounds of the trumpeters turned up three cygnets marked with the yellow plastic leg bands placed on them by field personnel of the Dominion Wildlife Service in Canada. Since blizzards prevented a complete check of the wintering flock, more Canadian-marked swans may have been present, and some of the unmarked adult swans are probably part of the flock which has its "home" grounds in Canada. Island Park, Idaho, is just across the Idaho-Montana state line from the Red Rock Lakes Migratory Waterfowl Refuge in southwestern Montana, the principal home of the American flock of trumpeters.

The dead swan had been banded at Saskatoon Lake, near Grande Prairie, Alberta, Canada, on August 22, 1954, by R. N. Mackay of the Dominion Wildlife Service. Saskatoon Lake is about 850 miles north of where it was found by J. R. Fisher of Blackfoot, Idaho. The usual range of the Canadian trumpeter in summer is from Grande Prairie, Alberta, to Vancouver Island and northward along the coast in the winter. These areas are reached by flights of the swans that are less than half the distance from Grande Prairie, Alberta, to Island Park, Idaho.

Previously, all observations and recoveries of marked birds had indicated that the American trumpeter is practically nonmigratory, seldom moving more than 100 miles, and staying close to its regular habitat in the Red Rock Lakes of Yellowstone Park and Jackson Lake-Island Park area. Because the trumpeters require large areas for breeding—each family insisting upon about a square mile of territory—and because of the growth of the Red Rock flock, U. S. Fish and Wildlife Service officials have suspected that some of the American birds have been crowded out of the area and have probably migrated to Canada; but up to the present time, there is no definite evidence of that movement. Recent developments will lead to a closer watch of both American and Canadian flocks in the future.

The trumpeter swan, which was near extinction in the United States a few decades ago, has come back until now the flock fluctuates around 600 birds. There is also the somewhat larger Canadian flock and additional trumpeters in Alaska.

The trumpeter was believed to have numbered in the thousands in the middle of the last century, and was generally considered to be a migratory bird. Skin hunters and others who shot the bird for sport or profit all but exterminated it. There is still the supposition that the Red Rock Lakes trumpeter lost its migratory inclination because warm springs in the area provided an ideal wintering situation.—THE EDITOR

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Roger Peterson's BIRD'S

Wings Behind the Iron Curtain

Birds have wings; they do not observe political boundaries—witness some of our gray-cheeked thrushes which migrate across the Bering Straits to nest in Siberia. We also like to think that ornithology, like the birds, knows no politics. But in recent years we have been pretty much in the dark about that immense land mass that lies between the Baltic Sea and the Bering. Is any serious bird work being done there? We could be certain that some activity was going on, for several kittiwakes carrying Russian bands were retaken in Newfoundland. And within the past four or five years a six-volume handbook of the birds of the U.S.S.R. has appeared in the bookstalls of western Europe, an exhaustive work on which 14 Russian ornithologists labored for 10 years. However, we did not see a Russian ornithologist in the flesh until June 1954 when four of their delegates attended the International Ornithological Congress at Basel, Switzerland. (They were accompanied by a young lady, presumably an interpreter.) At the previous Congress in Sweden in 1950, the Russians had cabled their regrets at not being able to attend.

Just as the Swiss Congress inspired the Africans to plan a Pan-African Ornithological Congress for 1957, it also undoubtedly sparked the First Russian Ornithological Congress which was held this past February. Four hundred professional ornithologists from all parts of the Soviet Union convened at the Academy in Leningrad for a week of scientific papers. Several representatives from other countries were invited including Guy Mountfort, secretary of the British Ornithologists Union, Professor Stresemann of Germany, Dr. Gudmundsson of Iceland, Johannsen of Denmark, and two or three others, but no American.

At the last moment James Fisher was extended an invitation. On impulse, he tucked under his arm his copy of my film, "Wild America," the picture which I made of our tour around the continent, in 1953. This is the first time an Audubon Screen Tour film has been shown behind the Iron Curtain. Mountfort showed

an English film produced by the Royal Society for the Protection of Birds. It was received with great admiration, but when James Fisher showed our film featuring national parks, wildlife refuges, Audubon sanctuaries, and other conservation activities on this side of the Atlantic the audience was so enthusiastic that they made him show it a second time. They seemed much impressed by the high quality of the 16-mm. nature films being turned out in the West and expressed astonishment at the amount of popular interest that exists in England and America.

All this is good propaganda, and heaven knows that wildlife the world over needs it. We are luckier than Europeans, I suppose, because of our excellent wild bird treaties with our good neighbors Canada and Mexico. On the other hand, imagine the complexity of protecting birds which may migrate through six or eight European countries on their way to their wintering grounds in Africa. I was very irked a year or two ago when I read a bit of publicity turned out by a tourist agent in Egypt. Come to the Nile for your duck shooting, it admonished. Bags of 200 birds a day are not unusual—there are no limits—shoot all you want. "After all," the article pointed out, "these birds were raised behind the Iron Curtain!"

Wildlife on Film

The Russians may have been impressed by the quality of my modest home-made film, but I wonder what our standards will be 10 or 20 years from now?

Actually, my film has no optical effects such as fadeouts, blends, wipes, or "zoom-shots"—in the intricate language of film editing. I employ nothing but straight cuts in the best way I know how. I have introduced no schematic maps or other animations, no superimposed titles, no synchronized sound track for mood when I desire a breather or change of pace during my lecture. These things are standard practice in non-theatrical films, thousands of which are turned out yearly by business firms, religious organizations, educational institutions, and government bureaus. How-

EYE VIEW

ever, a half-hour film produced by one of these organizations seldom has a budget of less than \$20,000 or \$25,000 and might cost \$50,000 or even more.

Naturally, the Audubon Screen Tour lectures cannot compete with this kind of money. Most of the 30 lecturers are working on a shoestring. Many can spare only three weeks or a month each year from their teaching or other duties for the Audubon cause and after spending perhaps \$1,000 in making a film, even the additional \$300 for a duplicate print is a matter for sober thought. These are low-cost lectures—low in cost for the sponsor, low in fee for the lecturer. But subconsciously, many people compare these films, fine as they are, with some of the flossy commercial products. Or perhaps they may even expect a Disney job, not realizing that Disney has skimmed the cream from the very best footage of some of these same photographers, has supported it with elaborately contrived studio footage, and has spent anywhere from a quarter-of-a-million to half-a-million dollars in making a film. Recently one of the bumptious young lads at the Linnaean Society in New York City said he wondered why the Audubon lecturers didn't keep up to date by making their films in technicolor instead of Kodachrome!

To get the lowdown on some of the modern trends in 16-mm. film production, Dorothy Dingley, assistant director of Audubon Screen Tours, Dr. Al Etter, one of our lecturers, and I attended the three-day mid-March workshop of the Calvin Company in Kansas City. Five or six hundred producers of non-theatrical films were in attendance. We learned about the preparation of scripts, optical effects, work prints, "a and b" rolls, and synchronized sound. We analyzed film till our eyes bugged out. We saw good examples and horrible examples of the professional cinema-photographer's craft. At the end of the three days I confided to Miss Dingley that my main reaction was one of discouragement—not because of the technical intricacies, but because of the expense involved. It was not so much the cost of the raw

film (even though it runs through the camera at the rate of \$3.00 a minute and even though one may use only one foot in five which he exposes), but rather the laboratory costs, if one wishes to do things the way Karl Maslowski, one of the Audubon Screen Tour lecturers, does them. If one wants the kind of camera that Cleveland Grant, another Audubon Screen Tour lecturer, uses, he must invest in an Arriflex camera (\$2,600 and up, depending on how many accessories are added)—and to really get the smoothest action, his

Continued on Page 130

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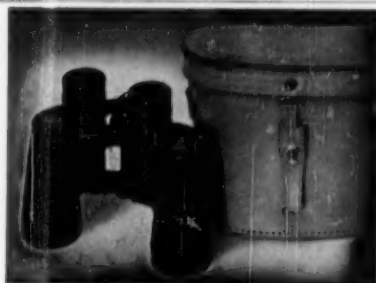
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Summer's Twilight Magic



Illustrations by Herbert Fennell.

**Fireflies in the summer dusk
are strange magic
—a combination
of scientific facts,
nostalgia, and the mystery
of cold light.**

By Nell Womack Evans

MAGIC are the fireflies that light the evenings of early summer—sparkling in flower beds, dancing over dewy lawns, teasing a drowsy pup or a playful kitten into a merry chase—*winking-blinking* over the fragrant meadows—*shining on-off*.

Beetles they are, with a family name of Lampyridae, which appro-

priately comes from the Greek word for "bright." To children, scooting for glass jars, they are lightning bugs, living lanterns, cold fire, stars in the hand. To all lovers of beauty, fireflies bring magic to summer's twilight, jewels to the night, yet how few of us know anything about these luminous creatures.

A common myth in some sections of the United States is that earth-





Photograph by Clifford Matteson.

worms turn into lightning bugs. This, no doubt, arose from the fact that like many insects, the firefly passes through a larval (grub) stage. The larvae (an estimated 16,000 of them per acre in their tropical habitat) are carnivorous. They eat earthworms, grubs, and snails, in their little-known aid to the crop-grower. In the laboratory, in absence of their chief cutworm delicacy, they eat

cheese, raw beef, lamb, pork, and flies.

There are about 60 of the lampyrid species in the United States that glow, and about 60 kinds that do not. Each kind has its own light signals, a sort of greenish-yellow tail-light "dot-and-dash" call for a mate. A common variety—kinfolk, I like to imagine, to the glimmering stars—I have often caught and held in my

hands is *Photinus pyralis*. His signal flashes on the upstroke of his flight once every two seconds, more rapidly on a warm evening, slower if it is cool. This is his call for a mate. Clarity of insect vision depends upon the number of facets in their compound eyes, and those of the searching male firefly may have as many as 2,500 facets in each.

Not so with his mate. Her eyes may have as few as 300 facets, and her flash-signal is single, a lingering yellowish glow at six-second intervals. I can testify that a carefully timed flashlight, emulating this single flash, can lure the male firefly to his mate in the grass, or to a glass jar in the hands of a prankish youngster. Remembering the times that I have indulged in the pleasant pastime of fooling the firefly I like to speculate that the "catch" of happy youngsters led to the laboratory studies from which were obtained the following facts.

Fireflies flash only in the dusk, and the period of flashing will occur each day after sundown. The lighting period of the firefly may be postponed artificially but once resumed, it will be repeated at 24-hour intervals, no matter what the clock says. This 24-hour rhythm is inherent in this beetle.

Firefly light is produced by the following: oxygen from the air, needed for the chemical reaction to take place; the light-emitting substance, luciferin, which must be excited by the third substance, and an enzyme called luciferase. Luciferase added to luciferin in a test tube will cause a flash of light, taking with it the luciferin. In the firefly's body this luciferin is revitalized by chemical energy after each flash, and so he can flash again. In the laboratory for additional flashes, an animal energy substance called adenosine triphosphate (ATP) is added as a "trigger"—the fourth necessary factor for the intermittent flashes. Science tells us this, but we still don't know how the firefly manages this magic outside the laboratory. The firefly's light produces no heat, and its light-producing rays are between red and blue in the spectrum—with greatest intensity in the yellow-green areas.

Magic, indeed, are the fireflies of the summer twilight. Sparkling . . . dancing . . . teasing . . . winking-blinking . . . shining on . . . off. . .

—THE END

All photographs by the author.

Man-Made Homes for



Joseph Parker of Oroville, Washington, inspects a Canada goose nest built in a wash tub.

CANADA GEES E

By Charles F. Yocum*

Cowhands, while riding the range in relatively unsettled cattle country of Montana, Idaho, Wyoming, Washington, Oregon, Utah, northern Nevada, and northwestern California, have come upon adult Canada geese with their downy young on isolated potholes and lakes on their land, or in remote portions of some of the inland rivers. Most of our westerners, though, are unaware of its breeding habitats. It is a product of the northern United States and the southern part of British Columbia, Alberta, and Saskatchewan, instead of the Far North as is generally supposed.**

Most people are inclined to believe that all Canada geese breed either in Canada or Alaska, and return in the fall from their far-off breeding grounds to fly over our great countryside on their way south

to wintering grounds. Throughout most of the Midwest and the eastern states this is true. Hunters, naturalists, and others thrill to the calls of Canada geese as they wing their way southward through frosty October nights on their seemingly uncharted highways of the air. Again, in March and April, eyes peer skyward at the waving, honking lines of geese on their return north. They disappear into the storm-whipped skies, riding the front of the warm air masses from the Gulf of Mexico that melts snow, frozen lakes, streams, and marshes. This thawing of ice and snow exposes food that is converted by geese into energy for their strenuous flight. At times "Northerns"

* The author is Head, Game Management, Humboldt State College, Arcata, California.

** According to the "Check-List of North American Birds" (1931 Edition), published by the American Ornithologists Union, the range of the common Canada goose, *Branta canadensis canadensis*, is as follows: "Breeds from Mackenzie and Northern Quebec to Labrador, south to the Gulf of St. Lawrence, James Bay, South Dakota, northern Colorado, northern Utah, northern Nevada, and northern California, west to Central Oregon, central Washington, central British Columbia, and occasionally, at least formerly in Tennessee (Reelfoot Lake) and Arkansas (Walker Lake). Winters from southern British Columbia, northwestern Wyoming, South Dakota, southern Wisconsin, southern Ontario, southern New England, and Nova Scotia, south to Florida, the Gulf Coast of Louisiana, Texas, Mexico, and southern California and west to Pacific Coast in British Columbia. Casual in Bermuda and Jamaica."—The Editor.

(storms from the northern Rockies or the Arctic) may stop this northward movement temporarily, and gangs of noisy geese often settle for a few days along the open rivers and in fields. There they wait for favorable weather before continuing to their breeding grounds, near Hudson and James Bays or along arctic shorelines and lakes and tundras, farther north and northwest.

In the State of Washington, Canada geese incubate their young along the banks of the upper Okanogan, Palouse, the turbulent Snake River, and the mighty Columbia. Many also nest in the channeled "scabland" country of the eastern part of Washington. Intensive studies here have uncovered a fascinating type of breeding area near the Canadian border. Along the Okanogan River, between Tonasket and Oroville, Washington, is a broad, "U-shaped" valley that was scooped out thousands of years ago by glaciers during the Pleistocene Period. Along the river are shrubs and herbs, and large cottonwoods and willow trees. The adjacent benchlands support thriving orchards and other agricultural crops. But the melting snows of the higher regions cause yearly high waters in most of the lower part of the valley, which leaves it unsuitable for farmland.



Canada goose leaving her nest, built in a tub high in a willow tree.

Canada geese along the shore of Lake Osoyoos, Okanogan County, Washington.





A man-made platform built in the top of a cottonwood tree for a Canada goose nesting site.

These flood waters produce an entirely different type of waterfowl nesting habitat, not in the dense undercover, but high in the cottonwood tree. Here we find great numbers of Canada geese nesting in old abandoned osprey nests. One can easily see an incubating goose from a distance, but when you approach the nesting area, she flattens her body and lowers her neck to try to conceal herself. Nests may be from 55 to 90

feet above the ground. This unusual nesting habit first attracted the interest of a sportsmen's group in this area in 1944.

It was on one of those soft March days that are typical of intermountainous areas of the Pacific Northwest when three citizens—Joe Parker, who is a barber in the prosperous town of Groville, Washington; Sam Gjarde, a former member of the Washington Game Commission; and

F. P. Sprouse—met on a bright Sunday morning at the ranch home of a friend living along the bank of the Okanogan River. Occasionally they heard the calls of Canada geese above the farm and river sounds. A series of calls from mated pairs of geese especially attracted their attention, and they decided to investigate along the river to locate its source.

As they rounded the first bend of

the river they discovered three pairs of Canada geese circling and trying to claim the same osprey nest high in a cottonwood tree. It seemed to be the only nest available. Uncontrolled fires during the winter and early spring had caused several old nests in trees to be destroyed when the dead trees supporting them burned. The three men understood the reason for the seemingly frantic honkings they had heard. All suitable nesting sites were taken, and somehow, more would have to be supplied for these home seekers if they were to have a place to produce their brood of young geese. The men began their project at once, and proceeded to gather willow twigs to begin construction of basket-like nests as best they could. They lined them with straw and hay, and then carefully placed them as high as possible in willow and cottonwood trees along the Okanogan River and around Horseshoe Lake. They were thrilled to observe the geese alighting in these new homes almost as soon as they were placed in the trees. They decided to continue the project.

During that spring they built and placed in trees 18 basket-like nests, 12 of which were occupied by geese. Early in the spring of 1945 they decided to build more willow nests; four were completed and placed in trees. To save time and effort they also retrieved two galvanized wash tubs from the local dump and put them in trees. They lined the outside of the first tubs with tall grasses held in upright positions with bailing wire to make them appear natural. However, the winds tore at the grasses and revealed the metal homes, but it apparently did not detract from their suitability because geese nested in them just the same. After the men had placed a tub in the top crotch, they nailed and wired it securely between the branches. They cut off the top branches level with the tub so that a goose could easily approach the nest site.

In 1946, 1947, and 1948 they added a few new nests; they repaired some; and as soon as an old galvanized tub was discarded they put it in an old treetop to await an oncoming family of honkers.

At this time another man became involved in the project. Steve Kru-soff, a well-known citizen of Oroville, became so engrossed in making



Young Canada geese just hatched in a ground-nest on an island in the Snake River.

and placing nests for geese that he developed a deep and lasting interest in all waterfowl. He had learned early in life to weave baskets. In 1949 he began making a new type of woven-willow nest, and he built several types. On one he used green willow twigs to form a large outer loop and bent other willows in criss-cross fashion to form a bowl. In another, he bent and wired willow shoots to those criss-crossed to form a receptacle for the hay and straw which was wired in each one to the bowl of the nest.

Steve placed nests near his home on Lake Osoyoos, and began making observations on the waterfowl that were soon nesting and living there. He also placed nests in the tops of yellow pine trees on Grubs Point on the east shore of Lake Osoyoos. At first the geese only visited these nests and did not attempt to use them, possibly due to human disturbance. Steve was not discouraged. He placed more nests on the Floyd Payne Ranch in that same community and several of these were used by geese. Some of the tubs were even placed

Continued on Page 127

View of the Okanogan River in early morning. A pair of Canada geese (center in background) convoy their young ones across the river.



Johnny F.

AND THE BIRDS

Illustrations by Herbert Fennell

This is a mother's appealing account of how she learned to identify birds. We believe that many of our readers will re-live their own early struggles with field identification of birds while reading Mrs. Bullard's story. Two boys—her son, and her son's dearest friend—taught her what she calls "the beginning of a lifetime avocation."—The Editor

By Mabel Elizabeth Bullard

THE capacity of chief-in-charge of transportation for my son and for Johnny F. is the thing that really led me afield. Some while back I mentioned that I had bought my binoculars in order to study the birds about me. I meant that literally. I carried them at times when I went places in order not to miss anything, but my original intention was to become familiar with the birds in my immediate neighborhood. I had no idea, at the time, how many exhaustive field trips are necessary to keep track of the birds in any given locality. And I had certainly never given any thought to the number of different habitats in which they dwell, and their relative inaccessibility.

Upon this point there hangs a mild "bone-of-contention." The boys insist that they are bird-watchers. It is my contention that they are too restless and sporting to sit and watch anything for very long. It seldom takes longer than half an hour, in their minds at least, to exhaust the possibilities of a birding spot. Then they are itching to be off to another spot where there is sure to be an owl or a loon or a wood duck. And I must admit that their judgment is often very good, and the lists which they compile are astonishing, to me at least. My own list exceeds, by far, the number of birds I had imagined one would find in our area.

But listing it is, I maintain, and not much akin to *watching*.

The little creatures who come to my yard I love dearly and I will watch them happily by the hour, if I have time.

I remember doing that very thing one spring about 12 years ago. It was the first year that I remember having heard the wood thrush's song, that most haunting of sounds, of which Thoreau said, "It is a medicative draught to my soul." It was that to me for the next several weeks as it pealed out at 5 a.m. each day and drew me from my bed with a sense of breathless anticipation of another beautiful day about to start.



"I had no idea how many field trips were necessary to keep track of the birds."

In the ensuing weeks a little thrush family played for me a drama that was rich in suspense, pathos, and even a little humor. I had no bird book at the time so I sent for the *National Geographic's* "The Book of Birds" in two volumes, in order to identify these little speckled "musicians of my court." I was in an agony of anticipation until the books arrived.

By that time the thrushes had

built the first of two nests on a low maple branch in the yard in back of ours, and had laid the first set of ill-fated eggs. These were raided and punctured by a catbird. In spite of my earnest entreaties to the wood thrushes to build in a safer spot, a second clutch of eggs was laid in the same nest. I believe they favored this particular spot because of an old discarded piece of linoleum close by which caught the rain water and served as a birdbath. They both delighted to bathe daily. The second setting of eggs escaped notice until they had hatched. But the mother's joy was short-lived, for the young birds were promptly devoured by a cat. The two yards were separated by a high wire fence and I was helpless to reach the nest in time to prevent the tragedy. By the time I had run half way around the block and through the adjoining yard, the damage was done. I was heartbroken, but the happy little birds wasted little time in starting a third family in a newly constructed nest only a few feet removed from the first. I no longer had the heart to watch.

"Go your silly way," I told them "for I can no longer bear to share your foolish ventures."

I did my best to put them out of mind, and did rather well, for by then the leaves were thick on the trees and I would have had to climb the fence to peer into the nest. Imagine my astonishment and delight one day, to see the mother thrush slip under the fence and cross our yard with three young birds trailing her! She led them directly to the birdbath. She looked so much the way a duck looks, leading her babes to water, that I half expected her to push them in and teach them to swim. Instead, she coaxed them all to sit on a branch just over her head while she bathed and drank. The

rest of the day she spent in feeding them and in teaching them to fly. I appointed myself as a guardian to ward off cats and other natural enemies. I would like to report that they all grew to maturity, but the next day they were all gone—who knows where?

When we started out this spring I knew scarcely more than 25 or 30 birds by sight. It is a good thing that I had no idea how much I would have to learn about the water birds. I had been calling all herons "cranes" and almost all small shorebirds were "sandpipers." I did know a killdeer when I saw one. I was guilty, also, of that most unforgivable of ornithological errors of calling all the various gulls "sea gulls."

I am sure at times that the only thing that kept Johnny F. from exploding in exasperation at my constant query, "What's that?", was the fact that he made a strenuous effort to remain a gentleman. He did remarkably well under the circumstances. Arthur learned much more readily than I did, and he managed not to be too condescending. When it came to the shorebirds, I think that, mostly, they felt sincerely sorry for me. At such times as their tolerance reached the stage of being real pity, they would offer me a hand over the slightest outcroppings in the terrain and insist in loud tones that I was "doing fine."

The only time that Johnny F. very nearly lost control of himself was the day that he and Arthur flushed a wood duck for me to see. I didn't see it. The fact that we had been on the trail of wood ducks for several weeks made the situation even more tense. But that was not my total offence. Shortly thereafter a green heron was wading on the opposite side of the lake. When it flew, it alighted in a pine tree, on the tip of a rather springy bough.

"Why, he landed in a tree," I exclaimed.

"So?" said Johnny F. with superior disdain, still disgusted over the wood duck incident.

"I've seen herons at nearly every body of water we have visited," I countered, "and never before have I seen one land in a tree."

"That's ridiculous," said he. "What about night herons?"

"Well, what about 'em?" I said, my chin out by now.

"You mean you've never seen one in a tree?"

"Never."

"Well!"

The "well" said thus, with explosive emphasis, is a pet expression of the boys' meaning, "Well, I never!" Well, I never had seen a heron in a tree until that day that I could remember. Since then I have been introduced to a rookery where they both rest and breed in trees. We learn by such gentle stages.

Some may react to this incident as inexcusable rudeness on Johnny F.'s part. I did not consider it so. In the open, climbing hills and descending valleys together, our relationship changes subtly and we become contemporary. I imagine that he, the same as I, often forgets momentarily the difference in our ages and stations in life. To be even more honest and exact, he usually falls quite naturally into the role of well-versed expert, while I am the blundering student, constantly turning to him for explanations of the things I see. Always he is patient and generous in sharing his wealth of knowledge and seldom, with me at any rate, conceited or ostentatious about it. When



"Why, he landed in a tree!" I exclaimed.

we return to more formal settings we revert quite effortlessly to the more formal relationship.

Only a short while after the incident of the flushed wood duck that I did not see, I found my own, and did not even recognize him. When we started out in the spring I supposed I knew a male mallard by sight because Arthur has a stuffed, rather battered old fellow in his room. But all the rest were ducks, and I did

not anticipate any trouble in learning to identify them. That was true up to the point where I discovered that the same duck has a different plumage for each season of the year. Learning these changes reminds me of the difficulties of learning a foreign language: you learn all the rules quickly first, in order to have plenty of time to learn all the exceptions to the rules.

It was the middle of August and I had reached the point in enthusiasm where I occasionally slipped off, alone, to see what I could find. I was proud of myself because I felt sure that I knew the 17 ducks drifting about on the north end of the pond were blacks, and the lonesome little fellow by the bridge was, without a doubt, a pied-billed grebe. Circling the pond to the south I flushed up a green heron. I was feeling very elated to recognize him so readily on the wing. Surveying the pond from the south end I saw another duck swimming all alone amid the pickerel weed. He looked different from anything I had seen before. I scribbled some quick notes in the notebook that I had for once remembered to carry with me: smaller than mallard; black in front of eye and down nose; white choker under chin and white chin strap; light area circling eye and radiating back; pin-striped breast; blue visible on wing edged with white at wing tips; rusty sides.

"Now, at last," I gloated, "I have a good concrete description of a bird and looking him up will be a pleasure."

At the end of a half-hour search in my field guide I was defeated. The only duck I could find with a white choker and chin strap marking was the wood duck, and this one certainly did not look very much like any of the illustrations in any of our books, not even those in the eclipse plumage. But Johnny F. assured me that this is what it was, so I supposed that it was half in and half out of whichever plumage it was in the process of changing to or from! Arthur has since gotten the Audubon Guides and they picture this bird in the plumage I have described, quite accurately. At any rate, he was the first and the only wood duck I have seen thus far outside of a museum.

In discussing the day's adventures with Johnny F., I mentioned the 17 black ducks on the pond.

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View of Linville River gorge, North Carolina. Photograph by Jack Dermid.

Photograph of *Shortia galacifolia*
by Gottsche-Schleisner.



By Ashton Chapman

DR. ASA GRAY was destined to become the foremost American botanist of his time. He was not yet 30 when, in the spring of 1839, in Paris, France, he made a discovery that proved to be the second episode in one of the most baffling "plant mysteries" in America. Begun half-a-century earlier, it was to become more and more puzzling until it was finally solved during the last year of Gray's life.

That day in Paris, more than 100 years ago, young Gray became bewitched by a strange little leaf and seed pod. He, of course, could not foresee that his resolve to find the habitat of the botanical fragment he held in his hand would cause him to turn detective, and yet, to neglect very obvious clues to finding the plant. It was to involve himself, other scientists, and laymen, too, in a widespread quest over rugged

Through 48 years, one of the best-known botanists of the 19th century hunted unsuccessfully for an American wildflower. In all this time he never doubted the ultimate success of

THE SEARCH FOR THE "LOST" SHORTIA

mountain terrain that would continue for the next 48 years.

Gray was in Europe in 1838 and 1839 with John Torrey, a distinguished American botanist, who was Gray's associate. They were examining American plant specimens in the principal herbaria on that continent to gather data for the important "Flora of North America" they were co-authoring.

The collecting area for the little specimen that awakened Gray's detective instincts was labeled "Hautes Montagnes de Caroline." The specimen had lain neglected and dusty among the plant collections of the eminent French botanist Andre Michaux who had gathered it while searching the wild, Indian-inhabited Blue Ridge and Great Smoky Mountains for rare plants and trees.

On April 8, 1839, Gray wrote: "I have discovered a new genus, in Michaux's herbarium—at the end, among the *plantae ignotae*. It is from that great unknown region, the high mountains of North Carolina . . . I claim the right of a discoverer to affix the name. So I say, as this is a good North American genus and comes from near Kentucky, it shall be christened *Shortia*."*

* The plant was named *Shortia galacifolia* (pronounced Shore'-tih-yah) by John Torrey and Asa Gray. John Torrey was a distinguished botanist, the teacher and colleague of Gray. The elder Torrey worked from Columbia College, later called

Gray never met Dr. Charles Wilkins Short, for whom he had named the mysterious American plant. His admiration for the Kentucky botanist was based on a voluminous correspondence about their mutual interest—botany. Dr. Short, who died in 1863, never saw a specimen of the plant named for him. Neither was Gray ever to see it blooming in its native habitat. For the next 40-odd years descriptions of *Shortia galacifolia* in botanical texts included the statement, "Flowers unknown."

Gray was eager to return to America to start his search for the plant's habitat. In the summer of 1840, accompanied by John Carey of New York, Gray organized his first searching party. They established headquarters in Jefferson, Ashe County, North Carolina. Gray and his party searched the mountains week after week for the plant, but in vain.

Reporting the lack of results to Sir William Jackson Hooker, who in that year had been made director of the Royal Gardens of Kew, Gray wrote: "We were likewise unsuccessful in our search for a remarkable undescribed plant, with a habit of *Pyrola* and the foliage of *Galax*, which was obtained by Michaux in

Columbia University, New York City; Gray from Harvard University. Gray helped Torrey prepare his "Flora of North America" (1838-1843). There are two species of *Shortia*—one is *Shortia galacifolia*, described in this article, the other is *Shortia sildanelloides*, native to Japan.—The Editor

the high mountains of Carolina . . . and we were anxious to obtain flowering specimens, that we might complete its history."

Gray and his party did not come within 100 miles of the spot Michaux had meticulously recorded in his diary, portions of which fortunately survived the shipwreck that almost drowned the French botanist on his return to Europe.

Michaux had written, "The road became more difficult as we approached the headwaters of the Keowee on the 8th of December, 1788. . . . There was in this place a little cabin inhabited by a family of Cherokee Indians. We stopped there to camp and I ran off to make some investigations. I gathered a new low woody plant with saw-toothed leaves creeping on the mountains at a short distance from the river."

Three days later Michaux wrote: "I came back to camp with my guide at the head of the Keowee and gathered a large quantity of the low woody plants with the saw-toothed leaves that I found the day I arrived. I did not see it on any other mountain. The Indians of the place told me that the leaves had a good taste when chewed and the odor was agreeable when crushed, which I found to be the case.

"Directions for finding this plant: The head of the Keowee is the junction of two considerable torrents which flow from cascades from the high mountains. This junction is made in a little plain which was formerly a city or village of the Cherokees. In descending to the junction of the two torrents, having the river at the left and the high mountains which look to the north on the right, one finds at about thirty to fifty paces from the confluence a little path formed by the Indian hunters. Continuing in this direction one arrives at last at the mountains where one finds this little shrub which covers the soil along with *Epigaea repens*" (trailing arbutus).

It has been debated whether Gray had access to Michaux's journal. Some claim he did and that he would hardly have started his search before consulting it but he evidently failed to connect *Shortia* with Michaux's references to the "low plant with saw-toothed leaves. At any rate Gray seems to have been misled by the Frenchman's repeated reference

to "the high mountains." It turned out that he was even looking in the wrong Carolina.

In 1843 Gray, accompanied this time by a Mr. Sullivan of Ohio, resumed his sleuthing in the North Carolina mountains; but once more the party confined their searches to the peaks. Their renewed quest took them up the slopes and over the crests of Grandfather Mountain—where Michaux had sung the Marseillaise in the mistaken belief he was standing on the highest peak in America. They also searched over Mount Mitchell and Roan Mountain—where the lily, *Lilium Grayi*, was first discovered by Gray and later named for him—and other of North Carolina's mile-high peaks. As best they could, they followed the trail of Michaux. The route traversed by the noted French botanist, and followed more than half a century later by the eminent American botanist, has been roughly indicated by markers erected several years ago by the North Carolina Department of Archives and History. At the end of Gray's months-long quest, the habitat of *Shortia* remained as much of an enigma as ever.

Meanwhile, the mystery had infected other botanists. One of these was the Reverend M. A. Curtis of Hillsboro, N. C., about whom Gray wrote: "No living botanist . . . is so well acquainted with the vegeta-

tion of the southern Allegheny Mountains, or has explored those of North Carolina so extensively . . . (Curtis) visited as opportunity occurred, the Yellow Mountain, the Roan, the Black Mountains, etc., and . . . to him we are indebted for local information which greatly facilitated our recent journey . . .

"Dr. Curtis was among the first to retrace the steps and discover the plants found and published by the elder Michaux, in the higher Allegheny Mountains."

In all his travels through the mountains the Reverend Curtis searched for, and made inquiries about, *Shortia galacifolia*. He died in 1872 and never saw a specimen.

Gray wrote: "Year after year I have hunted for that plant! And I grew sorrowful at having named after Dr. Short a plant nobody could find. So conspicuous for its absence had this rarity become, that friends of ours botanizing in the mountains two years ago, were accosted with the question—'Found *Shortia* yet?' from people who had seen our anxious search for it."

Thus had knowledge of the scientific name for an unknown plant spread throughout the southern mountains. It is still familiar there. *Shortia galacifolia* is the only botanical name known to many natives of the region, though comparatively few people have ever seen a specimen.

It remained for a 17-year-old North Carolina boy to turn up the first clue in the mystery. In May, 1877, 37 years after Gray assumed his role of botanical Sherlock Holmes, George McQueen Hyams of Statesville, North Carolina, found a colony of strange little plants growing beside the Catawba River, a few miles from Marion, county seat of McDowell County, at an altitude of about 2,500 feet. The boy's father, who was an herbalist, did not know the plant brought in by his son.

Eighteen months elapsed before the elder Hyams sent a specimen to a friend, Joseph W. Congdon of West Greenwich, Rhode Island. Believing it might possibly be the elusive *Shortia*, Congdon sent it to Gray for verification.

Dr. Gray's joy was unbounded when he identified it as *Shortia galacifolia*. After nearly four decades he finally held in his hands a living

Dr. Asa Gray, one of the most persistent searchers for the "lost" *Shortia*, as described in this article, was born on November 18, 1810, at Paris in Oneida County, New York. He died at Cambridge, Massachusetts, January 30, 1888. Dr. Gray became Fisher Professor of Natural History at Harvard in 1842, and held that position until his death. He is the only botanist ever to be enshrined in America's Hall of Fame. "Gray's Manual of Botany," first published in 1848, has gone through many revised editions, and is still a standard text of American botanists. Charles Darwin, who corresponded with Gray, wrote Gray a letter dated September 5, 1857, in which Darwin described his theory of evolution. This was previous to the publication of Darwin's "Origin of Species," and is said to be the first outline of Darwin's theory ever to reach America.—The Editor

specimen of the mysterious little plant he had been vainly seeking.

His jubilation and triumph are evident in a letter he wrote a friend: "If you will come here I can show you what will delight your eyes and cure you of the skeptical spirit you used to have about *Shortia galacifolia*... Think of it! My long faith rewarded at last!"

Gray made the trip from Boston to North Carolina to see with his own eyes the rare plant growing beside the Catawba. Turning to young Hyams, he exclaimed, "You have stumbled on what for many years I have tried so hard to find but never could."

Unfortunately it was not the blooming season for *Shortia*, so the flowers still had to remain undescribed, and classified as "Unknown."

Spurred by young Hyams' discovery, Gray strengthened his resolve to locate the spot where Michaux had collected his specimen. Gray, in a letter to his daughter, enthusiastically wrote, "I am not yet 69 years old, and I hope to try once more."

Stokes Penland of Linville Falls, North Carolina, who was past 90 when he died in 1938, used to tell about guiding Dr. Gray and his party of six in that year of 1879. For 20 days, Penland recalled, they scoured the Linville country and the peaks of the Iron and Unaka Mountains on the North Carolina-Tennessee line. Once again Gray found no trace of *Shortia*, although many years later it was discovered growing on Linville River some distance below mighty Linville Falls.

Seven years later, Charles Sprague Sargent, director of the Arnold Arboretum at Cambridge and Professor of Arboriculture at Harvard University, took up the search on behalf of Dr. Gray. Sargent and his party reached western North Carolina in the autumn of 1886, and established headquarters in what is known as the Toxaway country.

Sargent carefully noted the portion of Michaux's journal relating to the "low woody plants," and directed the efforts of his searching party with those passages in mind.

"Would I were with you," wrote Dr. Gray. "I can only say, crown yourself with glory by rediscovering the original habitat of *Shortia*."

On the very afternoon this letter

reached him Sargent was examining the day's collection when he held up a strange little evergreen leaf.

"Does any one know what this is?" he inquired.

"Why, that's *Shortia*, of course," one of the collectors jokingly replied.

It proved, however, to be no joke, for when Sargent sent the leaf to Dr. Gray he promptly identified it as a leaf from the long-sought *Shortia*.

When this information arrived, it added another complication to the mystery. The entire party was bewildered, because no one could remember just where the specimen had been collected.

Suspense mounted while Frank E. Boynton of Highlands, North Carolina, went back over the route that had been followed the day the *Shortia* leaf had been gathered.

He remembered the party had crossed the Horse Pasture River, which enters the Toxaway River. Minutely examining the terrain near the junction of these streams, Boynton at length found a faint trail he recalled, and which he now thought must be "the little path formed by the Indian hunters" mentioned by Michaux. After following this for some distance he discovered *Shortia* "covering the soil," just as described in Michaux's journal.

As Boynton wrote in a magazine article some years later, the spot, at an elevation of approximately 1,500 feet, is in Oconee (pronounced Oh-koh-nee) County, South Carolina, about two and one-half miles south of the North Carolina line. Farther down, the Keowee is formed by the junction of the Toxaway and White-water Rivers, the "two considerable torrents" mentioned by Michaux.

Once again it was not the blooming season for *Shortia*, but a specimen was dug up from the acid soil and sent to Dr. Gray from the very spot where the great French botanist had discovered the plants 98 years before.

Early the following spring, a member of the party returned to the Michaux station, where he found masses of dainty little white, fringed bells, each swaying in the mountain breeze on its pink-tinted stem rising about six inches from a rosette of glossy, scalloped leaves.

A box of the blossoming *Shortias* was sent to Dr. Gray. The eminent botanist, who was then in his 78th

year, wept with joy when at last he beheld the flowers he had vainly sought so many years.

The mystery surrounding *Shortia* was solved. And none too soon, for Dr. Gray, who had been most concerned with the search, died less than a year later, on January 30, 1888.

Because Michaux discovered it growing in what is now Oconee County, South Carolina, one of the common names for *Shortia galacifolia* is "*Oconee Bell*."

Dr. Charles A. Shull of West Asheville, North Carolina, Professor Emeritus of Plant Physiology, University of Chicago, who describes *Shortia* as "the loveliest and rarest of North American wildflowers," has suggested the name "*Carolina Fringed Bell*" for this shy, elusive groundcover, because it is native to both Carolinas. According to Dr. Charles F. Jenkins of Hemlock Arboretum, Mt. Airy, Philadelphia, "The North and South Carolina state line runs directly through the *Shortia* hiding places."

Dr. P. A. Davies, head of the Department of Biology, University of Louisville, Kentucky, traveled over both the South Carolina and North Carolina *Shortia* areas in May and June, 1951. He collected specimens of it on the upper part of Bear Camp Creek in Transylvania County, North Carolina and on Horse Pasture River, Bear Camp Creek, and the Toxaway River in that state. He likewise collected specimens of *Shortia* on Lackey Branch, which is a small tributary of Tom's Creek, also on John's Creek and an unnamed stream in the vicinity of John's Creek, all in McDowell County, North Carolina. Tom's Creek and the other two streams flow into the Catawba River, on the bank of which George McQueen Hyams made his discovery in 1877. Dr. Davies also got specimens of *Shortia* along Thompson River, in Oconee County, South Carolina.

Dr. D. B. Rosenkrans, Professor of Botany at Clemson (South Carolina) Agricultural College, reports that F. M. Crayton found *Shortia* on Linville River west of Table Rock Mountain in Burke County, North Carolina. Linville River was a tributary of the Catawba River before the creation of Lake James by a power dam about 20 years ago. Both streams now flow into the lake.

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Last summer, an article in a Wyoming newspaper praised the hiring of school children to destroy the eggs and young of American magpies. The author of the following article is Director of the Wilderness Society, and an internationally known authority on wildlife and its management in the West. This is his reply to a practice that he calls

BLOOD MONEY

for School Children

By Olaus J. Murie

AMONG our numerous feathered neighbors the group that includes the jays, crows, and ravens ranks near the top in intelligence. I have seen a raven flying over an arctic landscape and I wondered where in all that expanse of snow it could possibly find a tidbit to put into its stomach. Yet, a young Indian had starved to death near where

powered rifle means a real outdoorsman.

What makes the West? It doesn't necessarily mean the sham we put up to catch the tourist dollar. If we are sensitive to the charm of our country we know that the "West" is made up of many intangible qualities not easily depicted on a commercial roadside sign. A camper in the midst of the Rocky Mountains or in the sage plains may hear the

integration, to make the whole that appeals so much to us. And there should also be the human integration in this environment which, at its best, can ennoble our lives.

Some weeks ago the Council of the Wilderness Society honored us with its annual meeting at our home, at Moose, Wyoming. During one of the sessions in front of our cabin a large company of magpies came sailing across the clearing, sharply outlined against the Teton Mountains. During the time of their passing, those birds dominated our meeting.

I have mentioned the wit of the magpie. I remember a day when our Norwegian elkhound was lying out on the lawn, happily busy with a large bone. Presently a magpie lit on the grass not far away. The dog kept on gnawing and mouthing the bone, all oblivious. The magpie cocked its head, eyeing the bone and the dog, enviously I thought. It hopped across the grass, edging up nearer and nearer. Of course, it could not fly directly in under the jaws of the dog, no matter how enticing the morsel. Suddenly it hopped up behind the dog, took hold of the hair at the end of its tail, and gave it a lusty pull! The dog jumped up with a menacing growl at the fleeing bird, but turned back to his bone. Perhaps the trick did not work out as the magpie had hoped; or was this bird showing jealous spite or merely teasing?

Sometimes in winter at a carcass of a dead horse or an elk you will see one or two coyotes feasting, and a group of magpies alertly hopping in, here and there, for their share. Apparently they are all used to one another's company.

I have sometimes come upon the remains of an antelope which had



Illustrations
by the author.

I had seen a raven the day before, and had died within a mile of the trading post he was struggling to reach.

Besides the raven, jays and magpies also live by their wits—and they have a good supply of wit. And the magpie of our middle and western United States is certainly one of the handsomest of birds.

What makes the West? Those of us who live there are proud of it. We so often speak of "the last of the Old West." Too often we refer to gambling dens and all the so-called "picturesque" human baggage that hung about some of the early western settlements. A pair of cowboy boots doesn't necessarily mean a real cowboy, any more than a high-

midnight serenade of the coyote. How often have I heard: "The West is not the West without the coyote song!"

The pronghorn antelope of the sagelands, daintily coming in to drink at a desert waterhole; a group of sage grouse gathering at a spring-time strutting ground; the elk bugling on the autumn hillsides; the white-winged dove and the roadrunner of the Southwest; and the magpie, flashing its black and white plumage among the willows along a stream—these are the West. There are the cacti, yucca, and sage, and the wildflowers of the mountain heights. How can we isolate any one feature, and say "This is the West"? It takes all of them, in wonderful natural

been fatally wounded by hunters. The magpies, almost always, had already found it. Along the highways many rodents and birds are killed by speeding cars. Magpies are there to salvage the food and sometimes they are sharing the feast with a hawk, or even a golden eagle. The alert, active magpie somehow manages to get some of it, in spite of the strength and ability of its larger companions.

Ham and eggs seem to be the common American breakfast, and eggs constitute an ingredient in many human cookery projects. But we are not the only ones who like eggs. The magpie likes eggs too, whenever it can add them to its diet. It is understandable that when a magpie finds where a farmer's chickens have laid their eggs, and eats them, that the farmer is annoyed. But there is much misunderstanding of the ecology of the magpie in the natural order of things. Eggs? Sure, the magpie eats eggs, and some young birds too, in addition to in-

sects, carrion, and a lot of other things.*

Some people complain: "The magpie robs songbirds' nests!" as if that utterly condemns the bird. A neighbor of mine found a magpie nest, and asked me about the bird. I told him that I liked the magpie and I described it as a charming feature of the western landscape. A little later, another neighbor painted this bird as a villainous nest-robber. The magpie nest was destroyed.

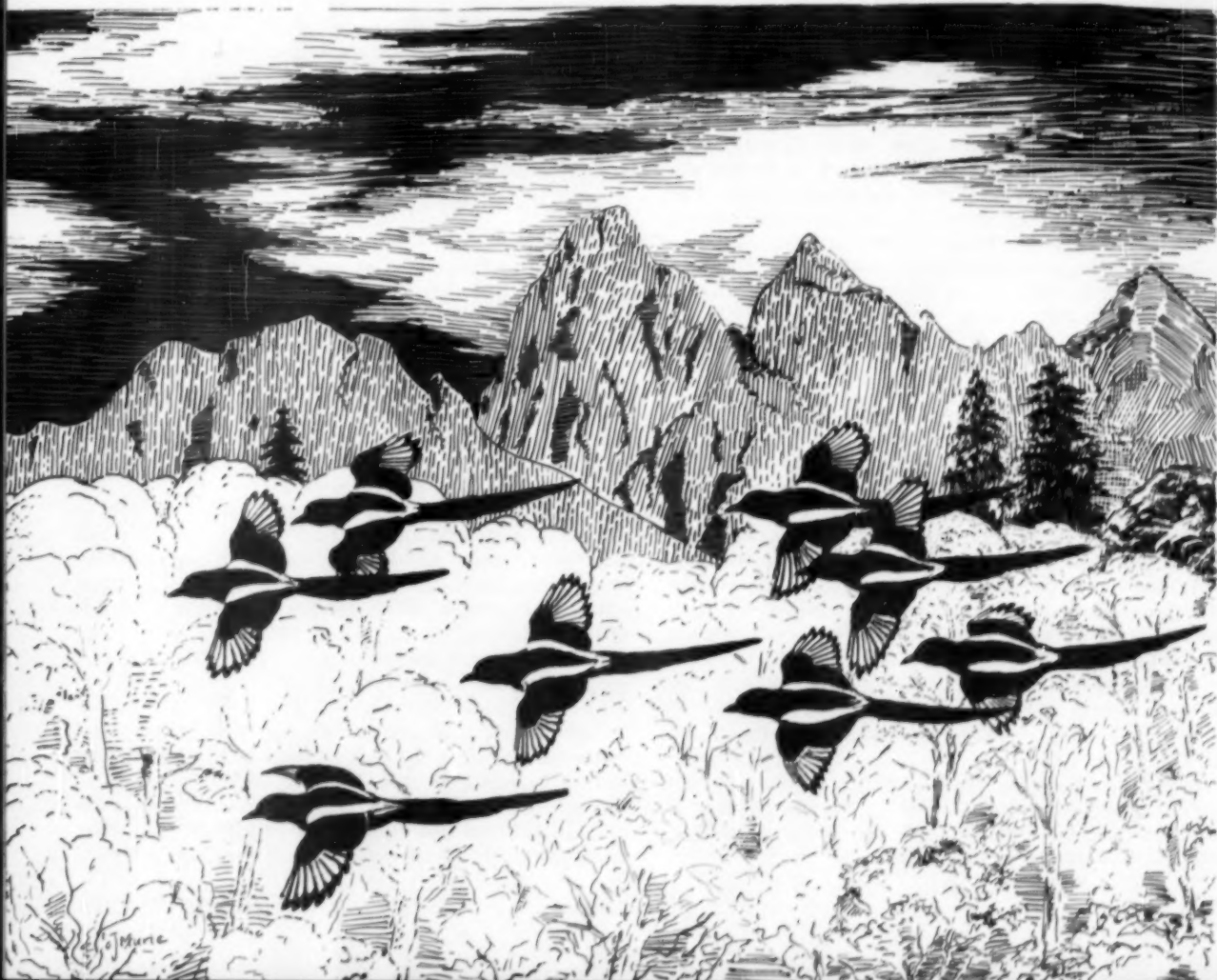
Did you ever calculate what would happen if every robin egg hatched and grew to maturity, and all the parents survived? The world would be full of robins, and there would not be enough earthworms and insect food to go round. The birds and mammals of the wilderness environment have so well adjusted their breeding habits to their environmen-

tal influences that they all survive and continue, through the years. The field mice, which furnish the food for so many other creatures, have several litters a year and have a high reproductive rate to compensate for the high predation on their kind.

I have sat in on sportsmen's meetings when plans were made for a campaign against the magpie. Apparently, the sportsmen at some of these meetings are not active enough themselves to do the job. So they enlist the help of school children, the youngsters who still have the power of walking and can get around the countryside. This kind of program is all too prevalent among certain sportsmen's groups in the western states, even at the present time. During the past year such a campaign, enlisting various youth groups that we have always associated with a wholesome view of nature, and participated in by the State of Wyoming, took place, apparently centered about Casper. I suppose a magpie campaign, at so many cents an

* For a detailed account of the food habits, distribution, and ecology of our magpies, see "The Natural History of Magpies," by Jean M. Hinsdale, Pacific Coast Avifauna No. 25, published by the Cooper Ornithological Society, University of California, Berkeley. Paperbound copy, \$3.00; clothbound, \$4.00.—The Editor

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THE PRESIDENT

New Sanctuaries

The first wildlife sanctuaries ever set up by your and associated societies in the San Francisco Bay area have been established on both eastern and western shores of the southern part of the Bay. Leases or use permits have been obtained from the Leslie Salt Company and the Ideal Cement Company, the owners of the land, and it is greatly to their credit that they recognize the importance and value of preserving these areas in pristine status for public benefit.

These are fringe areas of natural marsh, still unchanged by advancing civilization, bulldozing and subdivisions, and are used by great numbers of marsh birds, including waterfowl and shorebirds, which find there congenial haven, ample food supplies and peace to rest without human disturbance. Here to be seen in season are great numbers of marbled godwits, Hudsonian curlews, avocets, willets, and smaller shorebirds; also waterfowl of many kinds visiting California in fall and winter.

Involved are the major part of Greco Island, lying directly off Redwood City, and the Bay fringe land south of the Southern Pacific tracks at the eastern end of Dumbarton Bridge, south to Maury Slough.

Joining with your Society in the planning and leasing of these new sanctuaries are three branch Audubon Societies, the Golden Gate (San Francisco, Berkeley, Oakland, and Marin) Sequoia (San Mateo County), and Santa Clara Valley; also, we are happy to report, the San Francisco Bay Chapter of the Sierra Club. The maintenance of these sanctuaries as unspoiled natural habitats for the birds of the southern San Francisco Bay region will be of tremendous educational and recreational value to the ever increasing human population living in this environment.

Visitors Welcome at Corkscrew

Beginning March 15 last, visitors have been welcome at the Corkscrew Swamp Sanctuary in Collier County, Florida, where regulations have been adopted to further the pleasure and enjoyment of visitors and avoid disturbance to the wild plant and animal life. The only visitors' entrance is mid-way of the eastern boundary, where there is a gate in the fence close to warden Bennett's headquarters and the boardwalk. Under present access conditions, it is essential that visitors use their own or rented jeeps or jeep stations wagons to reach the sanctuary headquarters from Immokalee.

While it is not necessary to obtain prior authorization to visit, it will greatly facilitate visitors' satisfaction if they obtain from Audubon House in New York, well in advance, an information sheet on required procedure, which gives the names and addresses of various local guides with jeeps or jeep station wagons, data as to location and lodgings and sets forth the sundry regulations necessarily applying to visitors.

Our wardens must remain at the sanctuary, and are not available to meet visitors and transport them from Immokalee or elsewhere. Visitors must remain in the headquarters area or on the boardwalk. The gate will be open from 8 a.m. to sunset each day. No camping-out will be allowed in the sanctuary; no picking of wildflowers or collection of specimens of plants or wildlife for any reason; no photographic blinds or the use of flash bulbs. Interpretive personnel will meet visitors at the sanctuary headquarters and guide them on the boardwalk. There will be no limitation upon the length of time between 8 a.m. and sunset that visitors may remain in the headquarters area or on the boardwalk.

The 1,000 foot boardwalk extends from the virgin pineland through a strand of pond cypress to the area of tall bald, or tidewater, cypress and the Lettuce Lakes. Although visitors will be able to view from the boardwalk many of the great virgin trees festooned with Spanish moss, and many forms of wildlife and plants, views of large numbers of nesting birds cannot be guaranteed. The sanctuary contains 5,760 acres, and the location of the bird rookeries therein tends to vary from year to year.

A preliminary listing of plant and animal life reveals that one may find in the sanctuary 31 kinds of trees, shrubs, and vines, 20 aquatic plants, 9 ferns, 42 wildflowers, 5 terrestrial orchids, 10 epiphytic orchids, 5 epiphytic air plants, 13 mammals, 7 reptiles, and 105 species of birds.

Colorado River Storage Project Bill Enacted

The long fight to eliminate the Echo Park Dam feature of this project was, as you know, victorious. The conservationists then agreed to withdraw their opposition to the legislation. Provision was made in the bill "That as part of the Glen Canyon Unit the Secretary of the Interior shall take adequate protective measures to preclude impairment of the Rainbow Bridge National Monument." Section 3 of the bill read "It is the intention of Congress that no dam or reservoir constructed under the authorization of this Act shall be within any national park or monument."

In spite of the above, it will be necessary for conservationists to remain alert that no future efforts succeed that may be calculated to alter the project in such way as to authorize construction of a dam at Echo Park, or risk impairment of Rainbow Bridge National Monument.

Farm Bill

At this writing, it would not appear that any farm bill satisfactory to the present administration will be enacted at this session of Congress, and it is already so late in the year that any provisions affecting farm operations in 1956 are apt to be too late to have much effect on planting. It seems to the writer that the principal

REPORTS TO YOU

By John H. Baker

President of the National Audubon Society



defect is the absence of any provision to reduce existing surplus stocks to manageable proportions—that, after all, is the nub of the problem and is neglected.

There is presently in the bill an important innovation, which has received very little public notice. It provides a three year ban on the production of crops now in surplus on land developed through reclamation, flood control and drainage projects. Such ban, and for much longer than three years, has long been sorely needed.

The only farm crop of importance that is currently in short supply is timber, and the Soil Bank Plan, an important feature of the bill, is intended to promote timber production on acreage put in reserve. It seems to us important that there also be encouraged, as regards such reserve acreage, allowing the vegetation to grow wild, thus providing more feed and cover for wildlife, and reducing the chances of early resumption of grazing or food crop uses.

There are very practical difficulties as regards encouragement of timber and grazing grasses. The greatest bottle-neck in the expansion of nursery tree stock is the present lack of surplus seed. Present nursery stock is now committed, and is hardly adequate to meet current demand. To plant even 500,000 acres of the conservation reserve with trees each year, at the rate of only 800 per acre, would require an additional output of 400,000,000 nursery trees each year.

As regards grass seed for, say, one-half of a total of 27½ million acres estimated for the conservation reserve, it simply is not now available. It would take years to provide and would be extremely costly. Putting such land into grass would offer fearful temptation to hard-pressed farmers to graze it, transferring one surplus problem to another.

We have strongly urged that there be provision for automatic immediate cessation of any agricultural conservation, or any other, payments, for drainage, irrigation or land clearance on any of the land withdrawn.

In the last analysis, the only sure solution of the problem would be the destruction of the existing surplus.

Eternal Vigilance

The Army is making still another attempt to get outright control of 10,700 acres of the Wichita Mountains National Wildlife Refuge in Oklahoma for enlargement of Fort Sill. S. 3360 and H.R. 9965, introduced by senators and congressmen from Oklahoma, has been referred to the Senate Armed Services Committee, Senator Richard B. Russell of Georgia, Chairman, and to the House Committee on Merchant Marine and Fisheries, Hon. Herbert C. Bonner of North Carolina, Chairman.

The quite arrogant, inconsiderate attitude of the defense agencies in constantly pressuring to take over for their purposes federal lands previously dedicated to other purposes is notorious, and we are unaware of the present

existence of any such national emergency as would warrant destruction of our national wildlife refuge system.

National Wildlife Refuges and Mineral Leasing

The Secretary of the Interior produced a hullabaloo by issuing on December 2, 1955 a new set of regulations with regard to mineral leasing on national wildlife refuges.

The alarming feature is the manifest reversal of policy of the Department from one of frowning on, and restricting to a minimum, such mineral leasing, to one of favoring and stimulating such leasing; this even though the new regulations give to the Director of the Fish and Wildlife Service greater veto power than heretofore, as well as greater power to stipulate limitations on procedure. Ernest Swift, Executive Director of the National Wildlife Federation, put the matter in a nutshell when he said "The Secretary could have said no."

The question tends to boil down to whether the primary purpose of the national wildlife refuges is to protect the wildlife or to extract therefrom the greatest revenues for the government. There is a fundamental weakness in the position of many who oppose any mineral leasing, in that they favor the continuation of public hunting on at least a portion of many of the said refuges, and that may well be, and probably often is, just as conflicting with the primary purpose for which the refuges were set up.

The House Committee of Merchant Marine and Fisheries held public hearings on this matter, and published House Report #1941, approved by unanimous vote of the 16 Democratic and 12 Republican members. In it the Committee stated that the hearing record gave a picture of "extreme administrative confusion" and that it found "absolutely no effective liaison and coordination" between several bureaus of the Department or even between branches within the Fish and Wildlife Service. The Committee held the hearing in connection with its consideration of H.R. 5306 and identical bills that would require prior approval by Congress before the Secretary of the Interior could dispose of or relinquish any part of any national wildlife refuge. The Committee, in effect, postponed action by announcing it had reached an agreement with the Secretary of the Interior under which the Committee would be given 60 days notice of any plan to transfer or dispose of any interest the Fish and Wildlife Service may have in lands under its jurisdiction.

The fundamental question, it seems to the writer, is whether or not, in a democracy with a fast growing human population, the people are going to be able to rely, for proper protection of the national wildlife refuges, on the exercise of wise discretion by the governmental agency holding jurisdiction. Frequent political pressures will tend to override the protective stamina of the officials. Private organizations, free of political pres-

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Quito

Adopting a wild pet—no matter how well-intended—often results in tragedy. This is the story of a baby mountain lion that adopted her human friends, and could not bear to be parted from them.

By Freeman Tilden*

THE little kitten was lying alongside the road when the car full of tourists came along. There was deep forest on both sides of the road, for it was in Olympic National Park, Washington, the great preserve of primeval rain-forest on the peninsula that faces upon Puget Sound and the Pacific Ocean. The driver saw the kitten and stopped. One of the occupants of the car got out, picked up the little mewling thing, and they drove along.

Perhaps the tourists thought the spotted tabby was a lost domestic kitten; maybe they had merely acted on a generous impulse, without thinking at all. Whichever way it was, the fact remained: they had kidnapped a baby mountain lion, otherwise known as a cougar. It was probably fortunate for the kidnapper that the mother cougar was at the moment some distance away. A cougar is rarely dangerous to human beings except under some provocation. This might have been one of those challenges that the wild—large or small—meets with instinctive, quick action.

Very few Americans have ever seen a cougar. People have lived their lives in the Rocky Mountains and in the Pacific west-coast country without glimpsing one, though they are not uncommon enough to please the owners of livestock or the deer hunters who believe that man alone has the right to be a predatory animal. I have seen their tracks but have never seen the live animal itself outside a cage.

When the tourists who had picked up the baby mountain lion reached the park superintendent's house, they stopped and left the young animal with him. It was too late to return it to the wild because they

couldn't remember the place where they had found it. There were now three things that could be done with the cougar kitten: it could be turned loose, and would likely die a lingering death of starvation; it could be put out of the way painlessly with chloroform; or someone could try to feed it and care for it till it was able to fend for itself.

Major Tomlinson, the park superintendent, asked Al Rose, his ranger what he thought about it. Al said, "I'll see what I can do." And thus began one of the strangest and most delightful friendships—with a man and woman on one side, and a wild animal of singularly aloof disposition on the other. The story makes one wonder just how wild is a wild animal? How wild would they be if they were not hunted? Even cougars!

A full-grown cougar may weigh 150 pounds and more. It may slink away from man, going noiselessly on its big feet to avoid meeting him, but it can be a thing of concentrated muscle, determination, and fury when it finds itself put on the spot. This tiny cougar kitten, weak and with eyes only half open, had the same qualities in miniature, as Al was soon to experience.

Albert Rose and his wife Margaret love animals. They love all animals, whether they are called "predatory" animals or not. They are just as fond of bears, coyotes, and mountain lions as they are of deer, skunks, or squirrels. Albert Rose is now chief ranger of Mount Rainier National Park, and his experience with "Quito" the cougar happened some years ago.

"If our house had been the least bit dull before we took over that bit of snarling, scratching, biting bunch of fur, it didn't take it long to develop activity," Al Rose told me. "We fed her from a baby bottle, and each feeding was a skirmish. The only way she would drink was

lying on her back in our laps, and wildly clutching the bottle with all four feet. If the milk didn't come fast enough she would chew up the nipple and fly into a rage. The claws flew, and so did the milk. For this regular performance we had to put on long leather gloves and pad ourselves with thick towels. We bought rubber nipples by the dozen and iodine by the pint."

After the first few days of this exciting nursing, the cougar kitten fell sick. The Roses diagnosed it as constipation; a shrewd and accurate guess. The animal needed an enema. The ensuing treatment with the syringe was something the Roses would long remember. "It was like fighting a buzz-saw and threading a needle at the same time," says Al. "After the battle we turned her loose outside and followed her with a flashlight for a couple of hours, so she would not get lost. Then we took her in, put her in her box, and dressed our wounds."

They named her "Quito." In a very short time, Quito must have concluded that human beings were not so bad, after all. Her manners at mealtime were rough, but apparently well-intended. She learned to eat and drink from a small pan, but the Roses had to nail the pan to a board; otherwise the food flew in all directions, and Quito would seize the pan and would walk around with it, growling defiance. She ate canned pet food, eggs, and vegetables. Whatever human children might think about it, Quito doted on boiled spinach. Canned salmon was—well—*scrumptious*! The Roses added a little cod-liver oil, suggested in the care and feeding of infants. Born with spotted fur, Quito soon had her sleek, tawny coat of an adult cougar, and was lovely to see.

Quito was a stickler for the conventions. She was not merely housebroken; she was housebroken in reverse. She got the basic idea per-

* Author of the book, "The National Parks, What They Mean to You and Me," published by Alfred Knopf, N. Y., revised edition, 1954, \$5.00; paper-backed, pocket-sized edition, \$1.00.

"Quito must have concluded that human beings were not so bad after all." Photograph by Lynwood M. Chace.



fectly, but she had her own interpretation of it. If she happened to be playing out in the woods, and felt a call of nature, she would rush into the house and go modestly to her sandbox. This fulfilled the expected proprieties.

The growing cougar was allowed the freedom of the surrounding forest, but she did not wander far and came back at a whistle, bounding happily to her friends. She loved Margaret Rose, and had a good-natured tolerance of other women. Men she did not trust, especially strange men. The milkman was a special object of toothy snarling, and his German accented cry of "*Come take dat tam lion away!*" was a regular occurrence at the Rose's house where he made his daily delivery. Quito never tired of romping with children. The more they mauled her, the better she liked it. The greatest fun was hide-and-seek and when the children were all hidden Quito would hunt for them. When she found them, she capered with delight; and when it was Quito's turn to hide, she was overjoyed to be "found."

At night the Roses let Quito sleep at the foot of their bed. But she found that this was not quite chummy enough. Soon after she was allowed that liberty, she improved on it. Waiting till the Roses were asleep the little cougar would crawl up to the head of the bed and insert herself between Al and Margaret, with just her nose out of the bedclothes. With her head resting on Al's shoulder she signified her happiness with a purr that was like that of a domestic cat, only several times louder. "Why she chose my shoulder instead of Margaret's," says Al, "I don't know, except that she probably thought I could better withstand the vibration."

There was one game Quito invented that was not quite so pacific, and it used to make bystanders gasp a little. Quito would have called the game "snatch." She would suddenly seize a hat, a glove, or a galosh from someone, take it to the center of the floor, and defy the world to take it away from her. To meet this challenge required speed and nerve. Al Rose learned how to do it—without losing a hand. He picked up a small rug and threw it over Quito, then pushed it back until some part of

the trophy came into view. With a quick grab he got hold of the object to which Quito's teeth were fastened, and then started spinning the cougar. As she wouldn't let go, and because the spinning was rapid, Quito became as dizzy as any young child who turns around and around. At last she would let go, stagger helplessly for a while, and finally come over sheepishly to Al to be fondled. This was the sole game played with Quito that Al was afraid might sometime get out of hand. There was something of a savage reversion to the wild in it.

When the Roses went away for the day, they took Quito in their coupe. She loved to lie on the shelf at the rear window of the car and watch the world go by. If the Roses parked, they locked the car; and often they came back to find people around the car, waiting in confidence that the car-owners would be surprised and possibly frightened to discover a mountain lion in their vehicle. The crowd was always astonished when Al opened the car door and Quito greeted him with affectionate violence. On other visits about the country, Quito walked sedately on a leash beside Al and Margaret.

The charming association of Quito and her friends was approaching its end. In late autumn of that year, when Quito weighed a little more than 20 pounds, the Roses had to move to another station in the national park. It was adjacent to the park boundary, and the Roses knew that Quito, who considered all forest land to be her domain, would probably wander away on private land, and meet a quick death at the hands of someone anxious to collect the bounty on cougars. All animal life, whether predatory or not, is safe in the park sanctuary—or we like to think so. We had better say "theoretically" safe. At least, it is the intent of Congress that they should be. It was foolish to think of turning Quito loose within the park. A housebroken cougar, carefully nourished on boiled spinach and canned salmon, could not meet the competition in the wilderness. There was nothing to do but try to find Quito a suitable home. Who wants a nice housebroken cougar, sound, and kind to children? There was only one candidate—the Woodland Zoo in Se-

attle, who said they would take her.

"That was a sad day for Margaret and me," Al said. "We arrived in Seattle with Quito perched behind the seat, at her window. We didn't go directly to the zoo. We just drove around, weakly postponing the evil moment. Finally it had to come. I left Margaret crying in the car while I led Quito into the wild animal area. Instantly all hell broke loose! Either seeing Quito, or smelling her, every animal that could roar, bark, or scream cut loose. The din was terrifying. With a frantic leap Quito ran up my legs and jumped on my shoulders. She was trembling. I staggered with her to the quarantine cage, her claws embedded in my back, and managed to get her inside. Then my wife and I drove our dismal hundred miles home. We didn't talk. We just went."

Three weeks later Al and Margaret went to the zoo to see how Quito was doing. She was still in her quarantine cage. When they were still 200 feet away Margaret called to Quito. There was a noisy crowd all around, but Quito heard the familiar voice and went "mildly insane," as Al put it. An attendant let the Roses into the enclosure and stood shuddering while Al walked up to the cage and put his fist in Quito's mouth—an exchange of affection which had always pleased the cougar.

"Good gosh!" said the attendant, watching the endearment. "And we can't even get near the cage; we have to push the food in from back here."

That was the last Al and Margaret saw of Quito. The news came, a few months later, that Quito had died. No reason for her death was given. It might have been the change of food. It might have been that Quito could not adjust herself to the cries and odors of so many animals so strange to her. Who knows? Perhaps it may not be unforgivably sentimental to think that Quito—pacing her cage and recalling the nights when she slept so happily with her head on a man's shoulder, and of the gay times at hide-and-seek with shouting children, and the wonderful game of "snatch," and all the other happy hours with Al and Margaret—it might not, I say, be too absurd to believe that Quito just lost her will to live.

—THE END

MIDWEST CAMP OPENS JUNE 17

Five sessions of two weeks each will be conducted this summer at the Audubon Camp in northwestern Wisconsin, the National Audubon Society has announced.

The camp's second year of operation will start on June 17 and terminate September 1. Last year adult students from 19 states, the District of Columbia and Canada attended summer sessions at the camp on the Hunt Hill Sanctuary near Rice Lake and Spooner. It is the National Audubon Society's only nature and conservation training center in the Midwest.

Walter W. Engelke of Madison will again direct the Audubon Camp. He reported recently that a survey of those attending last summer's sessions revealed a cross-section of occupations. Represented were teachers, school principals, librarians, housewives, students,

doctors, secretaries, nurses, businessmen and retired people.

In discussing the attractions of the Audubon Camp, Mr. Engelke stated: "Each two-week session is a thrilling experience in outdoor living. Through daily field trips in small groups campers learn to know the world about them, become aware of the interdependence of all living things and their relation to soil, water, rocks, and weather; gain techniques for presenting this knowledge in a lively manner in their own teaching and leadership situations. There is constant opportunity for group discussions and individual consultation with instructors. Daily association with people of kindred interests from all over the country is a delightful feature."

Campers are comfortably housed in new frame buildings. Meals are served in an attractive dining hall, and a large

lounge provides space for evening movies, slides, and entertainment.

The Audubon Camp of Wisconsin has a staff of experienced naturalists who accompany small groups on field trips, give informal talks, and supervise projects. The Audubon Camp motto is "Have fun while learning."

There are no book assignments nor tests. Above the minimum age of 18, people of all ages can and do participate in the sessions. None of the hiking on field trips is strenuous; on longer trips the groups travel by station wagon or bus.

Sessions for this summer start on June 17, July 1, July 15, August 5, and August 19. Cost, which includes accommodations, meals, and tuition, is \$95 per person.

The camp is on Devil's Lake, four miles from Sarona.

★ ★ ★ NATURE IN THE NEWS ★ ★ ★

Skipper Sails in with a Puma as His Playmate

Reprinted from *The New York Times*, Wednesday, February 8, 1956

An English sea captain with a young male puma that bites only "if you try to pull your hand away too fast," wondered yesterday what would happen if he walked it on a leash through Times Square. Capt. Harold Pugh of the British freighter *Verdi* was told by a stevedore that Times Square and pumas were fundamentally incompatible and that the animal probably would be shot. So the Times Square walk is still in the contemplative stage.

The puma, which weighs thirty-five pounds and answers erratically to the name Duke, spends most of his time aboard on the bridge. At night he curls up beside the captain and purrs noisily till dawn.

Captain Pugh says that the creature has not bitten him more often than he has bitten it.

Pumas are a breed of cat that do not perform in circuses. . . .

Once a day, at supper time, Captain Pugh throws a pound of raw meat on the carpet of his cabin. Duke eats it with sounds that do not fall sweetly on the ear.

Last trip Captain Pugh had a black and red macaw about two feet tall. He would like to get a tapir when Duke outgrows friendship. . . .



The New York Times (by Patrick A. Burns)

Capt. Harold Pugh, skipper of the freighter *Verdi*, with his 13-month-old pet puma, Duke.

WHEN BIRDS ARE NOT AS

By Walter W. Ferguson*

WE HAVE all noticed, at one time or another, the difference between the appearance of birds seen in the field and those close at hand. Certainly birds do not change their colors as do chameleons, yet we observers are not "seeing things" when the same bird, in the same plumage, doesn't look the same. These variations can be attributed to the conditions under which they are seen and to the physiological makeup of the observer.

The first factors to consider are the physical conditions and the most important of these is the presence of light, without which we cannot see at all. With insufficient light, birds appear dark and vague—so much so that what we thought was a black-bird, seen in the shade, may suddenly fly out into the sunlight and we see that it is a cardinal. Too much light makes it difficult to see birds, if not impossible. I remember when I had persuaded some friends to accompany me on a field trip, which they agreed to do, rather reluctantly. They were soon convinced that all bird-watchers are prevaricators. Time after time I identified starlings perched way off on telephone wires and herring gulls flying practically out of sight. These feats are pretty hard to accept by the non-birder who doesn't know what to look for. They decided to call it a day when I tried to point out a string of geese flying towards the sun. Wouldn't you know that when their binoculars finally found the sky, the birds had "disappeared" into the sun? This phenomenon of disappearance is utilized by fighter planes which attack from the direction of the sun in order to be invisible to the enemy.

When a bird is illuminated from above, the darker upper parts seem lighter, and the lighter under parts seem darker. The whole form is flat-

tened too, and difficult to see. This pattern of coloration is another device used by man to camouflage airplanes. It also seems to be used by birds which may wish to remain unseen. I once had trouble watching a Buteo circling high overhead, which seemed to appear and disappear depending upon the angle at which its wings caught the light. Observing birds with the sun behind you affords the most desirable position for accurate perception, since the side of the bird facing you is well illuminated and your eyes are not dazzled by too much light.

The condition of the atmosphere will alter the appearance of birds by influencing the color of the light. On a bright sunny day the light is yellowish, making the illuminated parts of the bird seem lighter and warmer in color. The markings, too, become lighter and sometimes indistinct (see Plate I). The rest of the bird, which is in shade, appears darker and cooler in color since it usually reflects the bluish light from the sky; however, this is not always true as the reflected light may come from the warmly colored ground or leaves. Actually, the part of the bird that receives glancing light, which is the illuminated part, will reveal the color closest to that which is described as correct for the bird. These colors and their names have been standardized and may be found in the book, "A Nomenclature of Colors for Naturalists and Compendium of Useful Knowledge for Ornithologists," by Robert Ridgway (Little Brown & Company, Boston, 1886). Thus colors for birds have been rated scientifically, which eliminates the confusion caused by vague descriptions such as "chartreuse" warblers, etc.

At sunrise or at sunset, when the color of the light sometimes becomes almost orange, it is not unusual to see a "pink" swan or an "olive" blackbird. The particles of dust and water-vapor suspended in the air constitute the density of the atmosphere. The visual result of this for the observer is that the farther away a bird is, the less distinct is its form, and the lighter and less intense are its colors. A fog, mist, or rain filters

the light so that light-colored birds appear darker and dark-colored ones seem lighter, and they all tend to fuse into gray silhouettes (see Plate II). It also takes a fog or mist to produce "large" terns and shorebirds. They appear larger than they really are because the silhouette effect produced by the diffused light obliterates the color pattern. It also obliterates the light and shade patterns, which ordinarily break the appearance of the form into smaller shapes, some of which blend into the background making the whole bird seem smaller. Under these conditions, I've seen what I thought was a hawk silhouetted against the sky which turned out to be a butterfly.

In the field, the spots on a bird may seem to be stripes if they are close enough together, or they appear as a tone, or even disappear altogether if they are small and seen from some distance away. This visual phenomenon is familiar to us in the reproduction of printed and televised pictures where the image is composed of very small dots. Almost everyone has seen yellow warblers but unless you are very close to the bird, few have seen their fine reddish-brown streaks. On the other hand the elongated spots on the breast of a brown thrasher may appear as stripes from a distance.

Color contrast has an important effect on the reaction of our eyes. A light-colored bird seen against a dark background seems larger than it actually is, and a dark-colored bird against a light background seems smaller (see Plate III). The reason for this optical illusion is that light-colored objects reflect more light than dark ones, and they tend to radiate the reflected light so that it seems to impinge on the edges of the dark background. Another misleading result of the color contrast of a bird with its background is that a bird may appear lighter or darker, without the light changing, if it is seen against a background lighter or darker than itself. For example, an indigo bunting may seem to be a light blue against dark foliage but blue-black when silhouetted against a light sky (see Plate IV). Every color affects, and is affected by, the color

* The author, a promising young artist, has illustrated numerous articles in past issues of *Audubon Magazine*. During summer vacations, while he was in high school, he hitchhiked more than 18,000 miles across the country and into Canada and Mexico, making hundreds of sketches of the plant and animal life he saw. Mr. Ferguson has had a series of his animal paintings published in *Life Magazine*. At present, he is a staff artist at the American Museum of Natural History, New York City.—The Editor

THEY SEEM

Illustrations by the author.

The range of values from light to dark is much greater in life than in the illustrations. The author suggests that "squinting at the illustrations will help to compensate for this limitation and the effects described will be more apparent."

- 1—Black-poll warbler
- 2—Common tern.
- 3—Lark bunting (left).
Snow bunting (right).
- 4—Indigo bunting.
- 5—Dowitcher.

adjacent to it. The color of a bird that contrasts sharply with its background will appear more intense or tend to reflect the *opposite*, or complimentary, color. A scarlet tanager never looks so brilliant as it does when seen against a background of very green leaves. And a white tern seen against a blue sky may appear to have the pinkish bloom of a roseate tern because the complementary color of blue is orange (which looks pinkish when very light). When the color of the light is very strong (i.e., at sunset), or the bird is close to a highly reflective surface, such as sand or water, the color of the illuminating or reflected light will obliterate this effect.

The second basic factor that determines the appearance of birds is our own psychological interpretation of what we have seen. For instance, our past experience with "railroad track" perspective tells us that the crow seen in the distance isn't a blackbird or a fish crow even though it does seem smaller. And when the American knot we are looking at turns sideways and becomes a dowitcher, it's not a case of the bird changing to another species, but a foreshortening of the bill (see Plate V).

As our knowledge of the mechanics of variation in the appearance of birds increases, our perception becomes more accurate and we are more reliable observers. This does not apply only to bird-watching; the witnesses to an automobile accident generally disagree upon the color of the car that got away, and victims of a holdup aren't always sure of the height of the gunman. All in all, it is the challenge to our perception which is a part of the sport of bird-watching.

—THE END

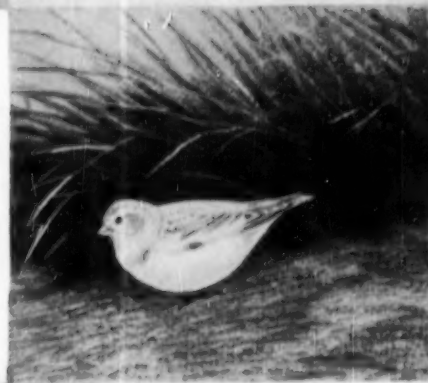
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egg or so many cents a magpie head, constitutes school children's education. A splendid background for the future world of "Democracy," which must rely on the principle of "live and let live"! Incidentally, the sportsmen's club figures that there will be so many more pheasants as targets for their shotguns—whatever the educational features might be!

I suppose one should not be too critical, personally. Many of those who carry a gun are no doubt very sincere—and sincerity is what the world most needs now. Many of us have bought hunting licenses and have hunted birds as well as big game. But there is an old traditional attitude against any animal which takes some other animal that we ourselves want to kill. This old tradition still clogs the human effort to build a democracy. It seems hard to realize that to many thousands of other people these persecuted birds and mammals are fascinating; those people like to have them around.

There is a "Number One" problem before the sportsman today, and it is not the scarcity of game. In many places we have the problem of *overpopulation* of big game herds. We also have a tremendous increase of human population, with always the danger of lowered ideals. There is the problem of keeping *quality* in outdoor experience. No matter how many millions of licenses we can glibly quote as sold annually in the United States, they don't mean a thing, if sportsmanship is to deteriorate at the present rate. The "outdoorsman" is losing the power, or the will, to walk. He wants, if possible, to shoot his big game from a car. He invades wilderness areas with a jeep to get his game all the easier.

Years ago, when I had as one of my duties that of fur warden in Alaska, I had a chance to talk with game wardens up there. One group told me that they recognized two kinds of non-resident shooters—"sportsmen" and "killers." Their appraisal was an eloquent comment on the two kinds of people who carry guns. We have had some outstanding outdoorsmen. We all know about "Teddy" Roosevelt—a shooter if ever there was one. But with all his shooting, he was an outdoorsman who believed in personal achievement, and could tell and could write about the beauty and the inspiration

of the wilderness in which he traveled.

There was Stewart Edward White. He was a hunter—in the North, in Africa, and elsewhere. But he wrote, among other books, "The Forest," "The Rules of the Game," and "The Silent Places." You can't accuse him of seeking only living targets for his gun. Read his books on his experiences in the Hudson Bay country or any other places he visited, and you readily see that he got a great deal more than went into his game bag. He was sensitive to the spirit of the place he was in, and he knew how to tell us about it.

Charles Sheldon was a hunter who had shot all kinds of game, but he was also a naturalist. Among other books, he wrote "The Wilderness of the Upper Yukon," and "The Wilderness of Denali." Again, he was not a mere shooter at a living target, but he had a keen interest in the life history of the species he hunted. He had much to do with the establishment of Mt. McKinley National Park, in Alaska, which was his "wilderness of Denali."

Go back to the accounts of the early explorations of the West. There is a little book by Ernest Ingersoll "Knocking Round the Rockies." No doubt about his feeling for this western country—he was a real outdoorsman with a sensitive mind.

In the present day of indiscriminate shooting, with a minimum of appreciation of the outdoor environment, there are some encouraging signs. More and more of our great national conservation societies are alert to the hunters' psychological problems. They are giving more attention to the wilderness quality of our country. Many individuals are striving to improve the shooter's outlook. I have letters showing that certain stockmen are feeling generous toward the persecuted animals. There is a growing feeling of sympathy and appreciation for the animals that share "the West" with us.

In the charming little magazine, "The Countryman," published at Oxfordshire, England, you will find choice little accounts of outdoor living. In the spring 1955 number, Bruce Campbell writes about "An Answer to Nest Robbing?" He tells of the prevalence of nest-robbing by the youth, but says—"broadly, education is the answer to nest-robbing,

and there is no doubt that the work of the Royal Society for the Protection of Birds, of the Boy Scouts and other youth organizations, and of many devoted school teachers has had a big effect in the last thirty years." Mr. Campbell put on a personal "bird campaign" of his own among the youth of his countryside. To a few members of a youth club he offered a small sum for "each nest which they watched to a successful conclusion." The boys were put on their honor to report their activities.

What is the attitude of some of those who gather in meetings in our country, and make their plans to have their way with certain birds and mammals that *they* do not consider *game*? Did it ever occur to them that our wildlife belongs to *all* of us, whether we choose to carry a gun, or just a notebook? We boast that we are a democracy. Do these men believe in democracy? Democracy means respect for the rights of others, a sharing with our neighbors. I have hunted, too, in the past. Just because I had a gun over my arm, did that give me the right to trample on the rights of landowners, to smash the sensibilities of those who like all forms of wildlife? Gun or no gun, whatever our station or occupation, it seems to me that in this crowded world we have all the more obligation to act like gentlemen. I am happy to say that I know many hunters who are gentlemen, hunters who appreciate the out-of-doors in which they travel, who find enjoyment in seeing other forms of wildlife which are not classified as game. I am not aware that such true outdoorsmen stoop to the low trick of bribing our school children to do their dirty work for them.

Everywhere, in this and other countries, educators are working with youth groups, trying to instill in the coming generations greater appreciation of the outdoors, a feeling of neighborly generosity toward all our wildlife.

Shall we then offer blood money to our youngsters, teaching them to be nest-robbers, teaching them to kill without the slightest trace of sportsmanship? Wouldn't it be better to instill in our children an appreciation of the beauty of nature, urge them toward physical prowess of a wholesome kind, and help them develop a sensitivity of heart?

—THE END

in the lower crotches of large willows or on sloping tree trunks.

In the spring of 1951 there were 53 artificial nests available for nesting geese. Parker and Krusoff inspected each nest and counted eggs in 12 of these. Geese were later seen in several of the other artificial nests and four pairs nested in the available osprey nests.

Goose nests in the Okanogan area average about seven eggs per nest (the 12 clutches counted in 1951 averaged 6.9 eggs per clutch). Based on these counts, it can be seen that these alert citizens of Oroville have contributed towards the successful hatching of approximately the following number of goslings:

- 1944— 77 goslings
- 1945—125 goslings
- 1946— 75 goslings
- 1947—110 goslings
- 1948—150 goslings
- 1951— 82 eggs counted in 12 of 52 tub nests; (40 of these tubs were not inspected although geese used many of them)—150 goslings

By the spring of 1953 approximately 80 artificial nests had been placed in trees! These figures are based on observations made by Parker and Krusoff, and show an excellent example of what can be done for our wild game species by energetic citizens, interested in perpetuating wildlife.

Many people would assume that this unusual nesting home would present a rather difficult problem for the mother goose when she takes her babies from the nest to the water. Some observers said the mother just "pushed" the young from their nest, others claimed they had seen the mother carry each gosling in turn by her bill to the water. The conflicting eye-witness reports do not verify the method most generally used; however, careful observations by Steve Krusoff during the spring of 1952 and of 1953, proved without a doubt that baby geese drop from the tree nests to the ground when both adults call softly to them from below the nest site. Mr. Krusoff has had a nest located in a cottonwood tree about 40 yards from his living room picture-window for about six years. A pair of wild geese nested there in 1952, 1953, and 1954. The broods left this nest by tumbling to the ground

within a day after they were hatched. Geese, unlike ducks, usually remain mated for life, unless one or the other of the mated pair is killed. Then the lone bird may pair again with another. The adults share in caring for the young.

There is no doubt that the citizens of Oroville have contributed a great deal toward the welfare of nesting Canada geese in their community. Geese that nest on the ground there are always in danger of floods that destroy their nests before they hatch, or by molestation from dogs or humans. Ospreys furnish only a limited number of available nests in

trees for the geese. A reduction of ospreys has limited the number of their nests available for geese. However, the people of this area are becoming aware of the association between the geese and the osprey and have encouraged protection of ospreys.

Undoubtedly, the Canada goose nest-building techniques used in Oroville can be modified and used in other Canada goose breeding areas. It is another wildlife management practice that holds great promise, and one that invites the active participation of anyone interested in the prosperity of one of our largest waterfowl.

—THE END

THE SEARCH FOR THE LOST SHORTIA

Continued from Page 115

Dr. Rosenkrans writes, "*Shortia* is found along nearly every little stream entering the Whitewater River in the Jocassee Valley. In some of the 'coves' it is very abundant. It has been found growing in several places along the banks and branches of Little River, and several stations on the Keowee. One station on the west bank of the Keowee is only about four miles from Clemson College, at an elevation of about 800 feet. All of the above are in Oconee County, South Carolina. *Shortia* has also been found in Pickens County, South Carolina, just below the entrance of Estatoe Creek into the Keowee."

Dr. Rosenkrans also reports that Wilbur H. Duncan, Haskell Venard, and G. W. McDowell, on March 19, 1949, found *Shortia* growing in a small bed, four feet wide and eight feet long, near Reed Creek in Rabun County, Georgia. Rabun County borders on Oconee County over the state line in South Carolina.

According to L. H. Bailey's "Standard Cyclopedia of Horticulture," "*Shortia*, like most plants considered rare, is really not so rare as local, though the few stations where it is found abundantly do not seem to present special conditions not to be found elsewhere... it is hardly understood why it should, in common with certain other plants, have remained strictly local, in an indigenous state... It is difficult to secure seed, as the flowering-stem usually withers away before maturing, though *Shortia* is readily propagated by divisions and runners."

Dr. B. W. Wells, Professor of Botany, North Carolina State College, Raleigh, states that one North Carolina station on the Toxaway River, where *Shortia* was numerous when he visited it some time ago, is at an elevation approaching 3,000 feet. The location is north of the bridge on which Federal Highway 64 crosses the Toxaway.

According to Dr. Wells, "*Shortia* is a lingering survival of another botanical age, on the way to extinction. But in the Toxaway country it grows profusely, mostly in places difficult of access."

Shortia has been successfully transplanted, and nurseries specializing in rare wildflowers now offer it for sale in limited quantities.

The range of *Shortia galacifolia* is confined to two general areas, both rather restricted. The larger area includes Oconee and the adjoining county of Pickens in South Carolina, Transylvania County in North Carolina, and Rabun County in Georgia, all adjacent to the point at which the three states meet. The other, smaller area is the Catawba River basin in McDowell County, North Carolina, and Linville River in the adjoining county of Burke. In all areas, the plants seem to prefer moist, shaded places.

—THE END

SCHOLARSHIP AWARD TO AUDUBON CAMP

A scholarship to a school teacher for a two-week session at the Audubon Camp of Wisconsin will be awarded this year by the Creative Educational Society of Mankato, Minnesota. The Creative Educational Society's scholarship awards are limited to teachers in Minnesota. Those who wish to apply should write to them at Mankato, Minnesota.

A black and white photograph showing an airplane flying over a forested mountain range, spraying a wide, conical plume of insecticide. The plume is bright against the dark forest and sky. The title 'INSECTICIDES' is printed in large, bold, white capital letters across the middle of the image, with the subtitle 'Boon or Bane?' in a smaller, italicized font below it.

INSECTICIDES

Boon or Bane?

An airplane spraying DDT over a forest in Idaho to control an outbreak of tussock moths. Photograph, courtesy of U.S. Fish and Wildlife Service.

According to an authority, there are more than 2,000 different brands of insecticides, fungicides, or combinations of both, on the market. A biologist of the U.S. Fish and Wildlife Service discusses the potential effects of some of these new sprays and dusts on birds and other kinds of wildlife.

(Part one of a two-part article)

By Paul F. Springer*

WHAT are garden sprays and dusts doing to birds in my yard? Will BHC, toxaphene, malathion, or other new poisons to control crop insects, harm quail and rabbits? Can insecticides be applied safely around farm ponds? Is insect control by chemicals compatible with the maintenance of wildlife? The many inquiries of this kind received each year by Audubon societies,

state game and fish departments, universities, the U. S. Fish and Wildlife Service, and other conservation agencies are indicative of the great concern of nature lovers and others interested in preserving our wildlife resources.

Before World War II there were, relatively, only a few chemical weapons, such as the arsenicals, nicotine, rotenone, and pyrethrum, that were used against insects. While these afforded a certain degree of protection, the farmer or home gardener could regularly figure on sharing a good part of his crop with the "bugs." However, in recent years, due to the

great technological advances by the chemical industry, nearly 100 effective new insecticides have been developed. Many of these are commonly spread over millions of acres of farm, forest, range, and marsh land each year. Use of the airplane for spraying and dusting these materials has made it possible to treat areas which formerly were inaccessible or could be reached only at prohibitive cost. Certain insects, such as mosquitoes, are subjected to upwards of a dozen or more sprayings a year. All in all, insect control is being practiced on a larger scale than ever before in history.

* The author is a biologist employed by the U. S. Fish and Wildlife Service at the Patuxent Research Refuge, Laurel, Maryland.

Economic Justification for Use of Insecticides

There is convincing, economic justification for such a program. The U. S. Department of Agriculture estimates that insects now cause losses amounting to over four billion dollars a year, and certain crops, such as cotton, are affected by more than 100 different kinds. Those who have never lived on a farm find it difficult to appreciate the destructive potentialities of insects to farm crops. However, anyone who has tried to grow beans, corn, tomatoes, or an apple tree in his small garden plot without some insecticides for protection, knows that unless he is blessed with extremely good fortune, his efforts are likely to be disappointing. With the rise in our present-day living standards, housewives demand market produce free of even the slightest blemish. Similarly, the annoyance from a few mosquitoes is sufficient to stimulate a flood of calls to the health department or mosquito control commission requesting them to thoroughly fog the neighborhood with chemicals or to spray nearby marshes. It is well to recall that were it not for insecticides, the production of our food and fiber and the protection of the health of ourselves and our animals would be immeasurably more difficult and our standards of living considerably lower.

Despite the enormous good wrought by insecticides, they must be considered in the category of mixed blessings. Being poisons, they can be harmful to birds, mammals, and fish. Damage to valuable wildlife resources has sometimes occurred unnecessarily because insecticides were applied without knowledge of accepted procedures or without full regard for the over-all consequences. Some materials are safe for recommended uses as long as label instructions are followed. Others are so poisonous that there is little or no margin of safety for animals that are not intended to be affected. From the viewpoint of the conservationist, a satisfactory insecticide should present minimum hazards to wildlife. When, in the long-range public interest, the advantages gained from a particular insect-control program are outweighed by damages to wildlife, then the insect control measures should be modified.

In problems of this type, wildlife values frequently are ignored as being of little significance. Or safeguards for this purpose may be dismissed as hindrances to economic progress. Actually, hunting and fishing combined constitute the most popular sport in the United States. No less than eight billion dollars are estimated to be spent by the public each year in pursuit of this means of recreation.* In addition, the food value of the game and fish harvested, not including the commercial take, is probably worth one-half to one billion dollars. As the nation's natural resources are more fully exploited and pressures of modern living continue to mount, the importance of our wild creatures as sources of relaxation and enjoyment increases. While the esthetic value of wildlife is difficult if not impossible to appraise in dollar and cents, in the opinion of many people it exceeds the direct monetary value of wildlife.

Classification of the New Insecticides

Most new insecticides may be divided into two broad classes, the chlorinated hydrocarbons and the organic phosphates. DDT is the best known example of the first group. Other hydrocarbons include BHC (benzene hexachloride), technical grade, lindane, toxaphene, DDD or TDE, methoxychlor, chlordane, heptachlor, aldrin, dieldrin, and endrin. These materials vary in toxicity but, in general, are chemically stable and retain their poisonous qualities for considerable lengths of time. Malathion, parathion, TEPP, EPN, chlorothion, diazinon, diptorex, and demeton are examples of organic phosphates. While some are extremely toxic to birds and mammals, as a whole they break down and lose their potency more quickly than the chlorinated hydrocarbons.

Oftentimes, it is difficult to determine the composition of a product from its commercial name, since this may give no indication of the insecticide it contains. However, a careful look at the label will reveal

* We must also consider the large sums of money spent by those who travel, buy cameras, binoculars, camping equipment, etc., for the pleasure of watching, studying, photographing, and otherwise enjoying wildlife. As pointed out by John H. Baker, page 82, *Audubon Magazine*, March-April 1956 issue, "there are a great many more people interested in recreational and other uses of the out-of-doors than hunters and fishermen alone."—The Editor

this information since its listing is required by law.

Insect Resistance to Chemicals

After World War II, DDT was by far the most popular insecticide and was considered a panacea for insect control. But the insects were not to be counted out so soon. In an amazingly short time, resistant populations of certain species began to appear. Some were able to withstand dosages of DDT 1,000 times greater than those originally needed to kill their ancestors. Now, in many parts of the country, such pests as houseflies, mosquitoes, roaches, body lice, fleas, bedbugs, lygus bugs on alfalfa, saltmarsh caterpillars, imported cabbage worms, cabbage loopers, and codling moths are impossible to control economically with DDT. When resistance of these insects was first noted, it seemed a simple matter of turning to other insecticides for their control. But this didn't always work. While substitutes sometimes proved temporarily effective, it was found that resistance to poisoning by DDT frequently meant they were resistant to other chlorinated hydrocarbons or that resistance to these alternate compounds quickly developed. Hence, there is a need for an entirely different group of control insecticides, which accounts for present increasing interest in the organic phosphates.

DDT still controls many insects effectively and economically, and is very much used. Studies have allayed to a large extent the early fears that it would wipe out wildlife (see the May-June 1952 and July-August 1952 issues of *Audubon Magazine*). At the same time, they showed that it easily could cause significant damage if not applied intelligently and circumspectly. *Because of the interest in the new "wonder" insecticides, other than DDT, and the general lack of public knowledge regarding their effects on wildlife, the present discussion is restricted largely to these chemicals.*

Investigations reveal that insecticides can give different results under different conditions of use. For comparison in this discussion, insecticides are rated as compared with DDT and the minimum dosage observed to produce significant damage

in nature is given. In view of the small numbers of tests with some chemical compounds, these figures do not always indicate the smallest dosages that can be expected to cause harm. The fact that a material can kill beneficial life should not necessarily be construed that the chemical is unsafe for use. The information herewith presented is to indicate its hazards in a given insect control program. Most of the studies involve insecticides that were sprayed.

How Mammals and Birds Are Affected

As with DDT, mammals usually show more resistance to poisoning by the new insecticides than do birds or fish. Tests on laboratory animals indicate that, as a general rule, methoxychlor, TDE, BHC, chlorthion, and malathion are *less harmful* than DDT. Intermediate in their harmful effects on mammals are lindane, toxaphene, and chlordane; *more lethal* than DDT are heptachlor, aldrin, endrin, dieldrin, diazinon, EPN, parathion, and TEPP. Usually, some variation in response to the various poisons can be expected among different kinds of mammals.

When aldrin was applied to Colorado's rangelands at the rate of two-tenths of a pound per acre in rolled wheat bait to combat Mormon crickets, the majority of wild mice on the rangeland treated died, but there was no observed effect on deer and rabbits. However, in California, cottontail rabbits, jack rabbits, meadow mice, and gophers were killed by treatments of one-half to one and one-half pounds per acre of dieldrin to orchards for control of insects in orchard cover crops. Endrin, although primarily used as an insecticide, is currently being used in several states as a ground spray for control of mice in orchards. These small animals were totally eliminated by applications of two and one-half pounds per acre of endrin in Virginia. There have been reports of dead rabbits and birds from these rates of poisoning with endrin. Mice also suffered heavy losses from ground treatments of parathion and toxaphene at four pounds per acre in Maryland and California orchards.

The relative order of the lethality of the new insecticides to birds

that have been tested, is similar to that observed for mammals, although chlordane appears to be more damaging than DDT. Pheasants and quail are less tolerant of some insecticides than are mourning doves and pintail ducks. However, ducks and geese are very sensitive to diazinon.

Aldrin, one of the most harmful of the chlorinated hydrocarbons to birds, is used to control grasshoppers in western states. As little as two ounces per acre of this chemical resulted in the death of nestling red-winged blackbirds, on rangeland in Montana, and of young waterfowl in marshes of North Dakota. Field experiments showed that the ducks were primarily affected as a result of eating aldrin-contaminated insects. Losses at this low dosage are not altogether unexpected in view of recent findings from feeding tests at the U. S. Fish and Wildlife Service's Patuxent Research Refuge in Maryland. These revealed that, at a one-ounce-per-acre rate of application of aldrin, one square foot of ground surface would contain enough of it to kill one adult quail or 16 quail chicks; two square feet would contain a lethal dose for a pheasant chick; and seven square feet enough to kill an adult pheasant.

In these same tests, endrin was determined to be similar in action to aldrin while dieldrin was somewhat less poisonous. However, dieldrin applied experimentally for mosquito control at two-tenths pounds per acre in marshes of New Jersey killed some songbirds whereas a one-half-pound-per-acre treatment for reduction of the rice leaf miner in California caused the death of a number of herons and egrets and a few shorebirds, mallards, and pheasants.

Some of the other chlorinated hydrocarbons are less destructive to birds. One and one-half pounds per acre of toxaphene applied experimentally to a North Dakota marsh caused only a small loss of ducks and coots. A similar spraying of one pound of chlordane per acre reduced the nestlings of marsh birds by one-half, but the adults survived without effect. BHC caused less damage than toxaphene and chlordane in feeding experiments with quail. TDE and methoxychlor were the safest materials tested.

Some of the organic phosphates

are very harmful to birds. Numerous blackbirds and bobolinks died in Georgia rice fields when parathion dust was applied at a rate of four-tenths pound per acre. In Washington State, the use of parathion and TEPP to control mites in apple orchards killed pheasants and robins. TEPP is readily absorbed through the skin of animals, and, amazingly, even through the horny covering on the feet of birds.

Certain insecticides have odors and tastes that are disagreeable to humans and may affect birds in like manner. In a feeding test of three weeks duration with bob-white quail, it was noticed that a number of the birds literally starved to death rather than eat more than nominal amounts of some of their insecticide-treated diets. Of the materials used, parathion, chlordane, toxaphene, and BHC was most repellent to bobwhites. More recently, it has been claimed that lindane applied to seed corn will protect it from depredations by pheasants but field tests in various localities have given conflicting results.

(To be continued in the next issue.)

BIRD'S-EYE VIEW—Continued from Page 103

tripod might cost \$1,000 or more!

There was a time, hardly 10 years ago, when lecture audiences were quite satisfied with any shot that moved or had color. Now, more sophisticated, they recognize top quality, but do not always realize what is behind it in the way of equipment, skill, knowledge, and money.

More and more does my admiration grow for the lecturers on our roster who make do with a Bell and Howell camera or a Bolex. Their films, on the whole, are fine indeed, constructed with imagination and loving care. These dedicated men and women are asked to fill the combined roles of biologist, artist, technician, teacher, conservationist, entertainer, and producer. Some are perhaps stronger in one department than in another. But, as I go around the country in their footsteps, I find that every last one of them is a favorite in certain cities, for audiences vary as much as do lecturers.

—THE END

"All mallards," said he, looking a little apologetic.

The way I looked at him should have warned him that I was at the end of the frustration I could take in one day.

"All females, then." I challenged.

"Females and males in eclipse," I was assured. Arthur and he exchanged a look of high amusement. I was not amused!

"I give up then!" I exploded. "The only duck I really thought I knew when I started was the male mallard—and now you tell me that I do not even know him when I see him. All right, from now on I'm strictly a bug woman. At least bugs have the good grace to stick to one suit of clothes."

"Wanna bet?" someone challenged quietly. I preferred to ignore the implication.

Of course, that was not the end of my interest in the ducks and I pulled several more silly "boners" before I learned to recognize at least the most common of them. Only a short while after that I decided to walk home from town one day. Along one of our most busily traveled thoroughfares there is a stretch of wooded land between the road and the river. A group of civic-minded people had been trying to have it properly developed for a city park. I had seen them working as I was passing, but had never gone in to investigate. It seemed like a good time to do so. It was still in a very raw state, with stubble and rubble all about and no finished pathways. Since I was dressed for town, and it was hot, I was not faring too well nor in a humor to truly enjoy it. So I headed directly to the river and sat upon a flat rock to rest. Up the river there swam a duck, and, paying no heed to me, it swam quite close. All I could think of were the blue patches on the brown wings. Surely I had "discovered" a blue-winged teal. Home I flew, as if on wings, to proclaim my "find" to the boys.

Were they properly impressed? No.

"Mrs. Bullard," said Johnny F. most respectfully, "I am sorry but I do not think it could have been a blue-winged teal."

I wanted to shout, "And why not, may I ask?" but common sense stepped in and I inquired meekly, "No? Why is that?"

"The size and the coloration you describe fit the female mallard exactly."

And, of course, they did; but I had to take down the bird books to prove it for myself. Now I can tell the mallards, blacks, and teals almost without a doubt. However, I always maintain a very cautious and discreet silence when in the field with others until they have first called the species.

Before the spring migration was over I was ready many times to give up on the warblers and the vireos, too. It was not until the fall migration that I really had an opportunity to study many of them at close range in my own backyard. If I was sure I had seen a particular bird, Johnny F. would tell me, very patiently, all the reasons why I had probably not seen that particular bird. He had to train me in the habit of studying the bird's range along with all the other factors. Fortunately for me, I already knew the yellow warbler. *He* was my saving grace.

Johnny F. has the advantage of

SCIENTIFIC REPORTS ABOUT BIRD DISASTERS AT CEILOMETERS

Mrs. Amelia Laskey of Nashville, Tennessee, who has been a "pioneer" in her personal observations of birds killed at airport ceilometers, has written us that she made her first report on this subject in 1952, to Mr. Frederick C. Lincoln of the U. S. Fish and Wildlife Service, Washington, D. C. Mrs. Laskey has urged us to make known to our readers that there are several detailed, scientific reports on these bird disasters at ceilometers, which were published in *The Migrant*, December 1951, and December 1954 issues; and in *The Wilson Bulletin*, September 1954 issue.

The Migrant is a quarterly ornithological journal published by the Tennessee Ornithological Society. Membership (\$1.50 a year) includes the journal. The editor is Dr. L. R. Herndon, 1533 Burge Place, Elizabethton, Tennessee. Subscription (out-of-state) to *The Migrant* is \$1.00 a year.

The Wilson Bulletin is a quarterly ornithological journal published by The Wilson Ornithological Society. Active membership, which includes *The Wilson Bulletin*, is \$3.00 a year. The editor is Dr. Keith L. Dixon, Department of Wildlife Management, Agricultural and Mechanical College of Texas, College Station, Texas.—THE EDITOR

being able to recognize most of the songbirds by their songs. When we first enter an area he begins immediately to identify the birds in that area by their notes before even he has seen them. I think a natural "ear" for music helps him. When he asks me what a song sounded like, even after I have listened most patiently and attentively, I feel so stupid because I cannot recall it to mind.

During the nesting season Johnny F. had a regular route laid out over which he passed several times a week to note the progress of half-a-dozen species of nesting birds. I was invited to accompany him and Arthur one day after school. I envied them their youthful disregard of property boundaries. I was definitely uncomfortable and still suffer the same kind of discomfort in the face of "No Trespassing" signs, although I have never been challenged. It is most unfortunate that we have almost no unposted areas except well-trampled parks and sanctuaries in which to pursue the study of nature in our time and area. Unlike Thoreau, who says he could walk for "ten, fifteen, twenty, any number of miles, commencing at my own door" we are beset on all sides by boundaries. How well did he predict, as long as a hundred years ago, what civilization and the parceling and fencing of land would do.

We live on the fringe of a world-famous section inhabited mostly by artists, writers, and wealthy executives. On every country lane one may see stretches of lovely estates. Johnny F.'s route passed through a part of this area. One gentleman allows the boys to pass through his estate and stops them to ask them about the birds and other things that they see there. He is constantly surprised at the wealth of natural phenomena at his own door. Right next door to this place is another lovely estate whose owner has denied the boys permission to cross, proclaiming that he would watch his own birds!

All about us on this perfect spring day there were rose-breasted grosbeaks, brown thrashers, and wood thrushes, pouring forth their melodies with wild abandon. I was treated to a peek into a robin's nest containing three very new and shapeless babies. They seemed all head and pink flesh.—To be concluded in the next issue.



*Drawings by Louis
Agassiz Puertes*

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How to Attract Birds



May Their Tribes Increase

By Jesse Stuart

WE HAVE more wildlife around us than any family I know. My wife, daughter, and I have increased our family to something over 300 birds, ground squirrels, or chipmunks, 'possums, gray squirrels, and rabbits. To the birds, rabbits, and squirrels, and including our cocker spaniel, I have given much of my time serving as a judge in their disputes. We love all of these birds and other creatures, and believe they have learned to love us.

Sixteen years ago, when my wife and I converted an old house my father was using for a barn, into a home and moved in, this place was virtually deserted. In those days boys with rifles and airguns passed through killing birds. House cats, left by families that had moved, went wild, and at night caught young rabbits and whip-poor-wills.

During the first summer we lived there, a pair of redbirds built a nest, 100 yards away in the far corner of our backyard. We welcomed these delightful birds and named them Peter and Lucy. We observed them at a safe distance because they were very wild. We often watched Lucy when she was incubating her eggs. We were delighted when old Peter, a beautiful male with a high red topknot and a shiny, short, strong beak, brought Lucy food. And when Lucy's eggs hatched, we stood at a safe distance, and watched this pair. I never knew redbirds were so beautiful, so industrious, and so sensible. These birds taught us something in home-cooperation. Human parents could never work more cooperatively with their young. That summer, when Peter and Lucy built their second nest, they made it in a shrub which was little closer to our house.

The second summer that Peter and

Photographs by Lyle V. Douthat.

Jesse Stuart with his cocker spaniel, Birchfield.





Mr. Stuart's wife, Naomi, and daughter, Jane, draw water with a "sweep" from the old well in their sideyard.

Lucy returned, they built in a shrub still closer to us. Another pair of redbirds came and we thought one of their children had taken a mate and had returned with his parents. We liked to think this. But we definitely knew Peter and Lucy were back. Phoebes came, too, and built a mud nest above our backdoor. They lined it with soft straws and feathers. Song sparrows built in the ivy at the base of our chimney. English sparrows built in the tall cedar above the house. I was not friendly with English sparrows but my wife, Naomi, wouldn't let me shoot them. And I am glad she didn't for I watched them, during the spring and summer, worm my cabbages and pick the aphids from the flowers in my yard. I was sorry now I had ever killed them for I had seen them at work with my own eyes.

Then, Naomi wanted me to build a feed box for our birds. I did, and nailed it to the smokehouse directly in front of our dining room window. Here we put crumbs from our table. While we ate breakfast, we watched our birds eating their breakfasts and carrying crumbs to their young. And it was here I observed bird families didn't get along. The redbirds didn't have any use for the English sparrows. Old Peter made the feathers fly from the male sparrows. He guarded the feed box each morning. And if the sparrows got anything at all, it was after the redbirds were through eating. Often the sparrows picked up the crumbs under the box that redbirds had scratched to the ground.

Bluebirds had three nests here. One was in a dead apple tree which was ready to fall across the road. I let it stand on account of my bluebirds. They had nests in two fence posts. I wouldn't rebuild this fence because of my bluebirds. The posts had given way but I set sound ones between the old to hold the fence to keep our cattle from coming into the yard. The goldfinch, never a bird to become tame, ranged not far from our house, near the cliffs and beside a creek.

bottom I had sown in wheat. Speckled wood thrushes built in a waterbirch on the bank of the creek beside our chicken-house. Birds were coming in from all directions. Even a pair of indigo bunt-

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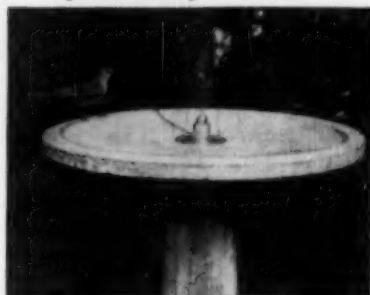
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ings built a nest at the base of a wild snowball bush near the bluff.

Our fourth winter here was a cold one and the thermometer dropped once to 19 below. It remained cold for days and our W-Hollow valley was a great, white silence. I went one morning to feed my chickens and while I was putting my hand back in the nests to see if any hens had laid early that morning, I felt a furry object in the hen's nest. I jerked my hand back, raised the long flap-door along the row of nests, and there lay a 'possum in a hen's nest. He had come in from the winter-cold. He could have easily bitten my hand but he didn't. So I left him in the cozy hen's nest. The chickens didn't mind his being with them despite the fact that 'possums sometimes catch chickens. But this 'possum ate the chicken-mash I had mixed with warm water. He was so hungry he ate with the chickens in my presence. He stayed until the cold spell broke, and I did not see him again until a cold spell in the following winter. This time, three 'possums—the old one and two small ones—came and ate with the chickens until the cold spell vanished. Then they went back into the deep dark winter woods, hundreds of acres where there is not a single habitation. This was their home and they loved it more than the henhouse and our spot of civilization.

Peter and Lucy, the redbirds, kept coming closer to our house. After building two seasons in shrubs in the back-

ABOUT THE AUTHOR

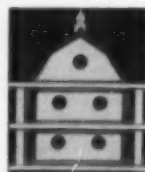
Jesse Stuart is the author of 17 books, of which "Taps for Private Tussie," his most popular one, was a best seller when it appeared in 1943. His books have been translated into many languages, and include poetry, novels, and non-fiction. In them he has immortalized a region and its people—the hill country of Kentucky. This is one of the last sections in the United States where the traditions of the earliest settlers still live. Mr. Stuart says that he has written more than 300 short stories, but "May Their Tribes Increase" is the first "nature article" he ever wrote. Besides being a writer, Mr. Stuart is a lecturer, a teacher, and a Kentucky farmer. In October, 1954, a heart attack temporarily "retired" Mr. Stuart to his 800 acres of hill country at Riverton, Kentucky. Since then his articles have been appearing frequently in the general, large-circulation magazines. He wrote a particularly appealing one about his father, called "He was Part of This Land," which appeared in *The Saturday Evening Post*, November 1955 issue. Mr. Stuart lives with his wife and daughter in a Kentucky valley called W-Hollow. This area is prominent as the background in one of Mr. Stuart's books, called "Head O W-Hollow."—The Editor

WILD FLOWERS and FERNS

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yard, they built in the vines on the rear of the smokehouse. One season they built two nests here. Then they moved a few feet closer, and built on the woodshed. They built the following spring in the vines on the back of our house. They had two nests there. Then they built in the vines above our bathroom window. That wasn't close enough. They built just over the window by our kitchen sink. When we looked through the window at Peter and Lucy, there was only the thickness of a window pane between us. Lucy would often break out singing when she sat on her eggs. My wife, Naomi would put her face up against the pane and sing to Lucy. Lucy would break out in song again. When Lucy didn't Naomi would, then Lucy would start. We thought they were as close as they could come without coming inside our house. If our door had been left open, I believe they would have come inside.

Their last nest this summer was about four feet above the ground in a vine beside our kitchen door. When we walked outside, we often brushed against Lucy's long tail but she wouldn't fly, unless strangers walked through our kitchen door. While she sat on her eggs, we watched Peter chew a worm in his bill before he fed her. And often when we turned on the back door light at night we saw him sitting beside her. He sat on a vine and she sat on the eggs or brooded over the young birds.

Last summer we had 38 birds' nests, of 11 different species, in our yard. We had our first hummingbird's nest that we had ever seen. We learned bergamot (horsemint) would bring the hummingbirds and we planted it about our yard. We set our table beside the clusters of bergamot and when we eat breakfast or our evening meal in the backyard, hummingbirds are getting theirs, too, from the pretty red bergamot blossoms beside our table. We watch them "stand in the air" on their wings, and fly backwards, or fly straight up or down at terrific speeds, and fly forward like little jet-planes.

The dead apple tree fell across the road. My fence posts had rotted and so I built a new fence of the old apple tree. My bluebirds didn't have the old hollow tree to nest in, but fortunately, Mr. W. G. Duncan of Peaslee-Gaulbert Corporation, Louisville, Kentucky, whose hobby is bluebirds, mailed me four bluebird boxes. By the time we ceased our correspondence about bluebirds, Mr. Duncan had sent me 20 nest boxes. I put them all up and I have my bluebirds back, but they nested in only three of the boxes. Next year, their young may be back and perhaps I will have more.

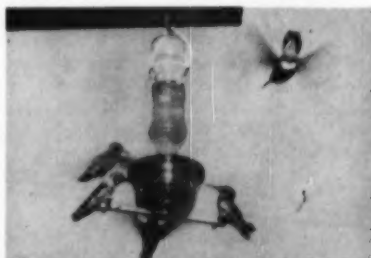
One morning two years ago, while at the breakfast table, we saw a little ground squirrel, or chipmunk, with a bobbed-tail sitting on the rock wall of

the stream that flows under our house. He was washing his face with his paws, sitting upright, with the stub of his tail sticking straight out. We laughed when we saw him. The following day, he found the walnuts my daughter Jane had gathered, and had stored in the hen-house. He'd carry a walnut until he tired and then he'd roll it across the yard. The walnut was hard to get inside his home burrow beside the rock wall, so he backed into the hole and pulled the walnut in after him. All summer he

Continued on Page 139



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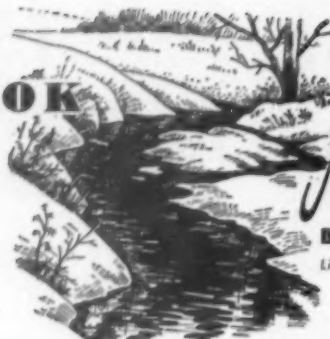
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AS THE INDIANS LEFT IT: The Story of the Chattanooga Audubon Society and Its Elise Chapin Wildlife Sanctuary

By Robert Sparks Walker, George C. Hudson & Co., Chattanooga, Tennessee, 1955. 9 1/4 x 6 1/4 in., 239 pp. Illustrated. Indexed. \$3.50.

One of the aims of the Chattanooga Audubon Society when it was organized was the acquisition and development of the Walker farm on which the author of this book was born and grew up. This land was occupied by the Cherokees until 1838, when they were forced to abandon it and to settle in Oklahoma. Some 10 years ago it was donated to the Chattanooga Audubon Society. Part One of the book describes the methods used in planting, cultivating, and harvesting the various farm crops in the early days. Part Two concerns the development of the sanctuary, the main interest of which is centered on 20 acres of virgin forest, also the "literary acres" where trees have been named in honor of famous naturalists, Spring Frog Cabin built by the Indians 200 years ago, and, of course, the flowers and wildlife. Maps on the lining papers help the reader to locate the various features mentioned in the text.

TRAVELS AND TRADITIONS OF WATERFOWL

By H. Albert Hochbaum, University of Minnesota Press, Minneapolis, 1955. 10 1/2 x 7 in., 301 pp. Illustrated. Indexed. \$5.00.

From time immemorial man has wondered about the appearance or disappearance of birds at certain times of the year. In these last decades their migrations have been studied by amateur and professional ornithologists. Theories have been advanced, and, little by little, a general picture of their movements has emerged, though no completely satisfactory explanation of their navigational powers has been found. This book should add to the existing knowledge. The author has chosen to divide his study into three parts. Of these, the first is devoted to the patterns of local movements in the flight of geese and ducks on their home range at Delta Marsh in

southern Manitoba, where for 16 years the author has been director of the Waterfowl Research Station. The second part treats of migration proper, as observed in Manitoba and elsewhere, and the third, the theory of "tradition" in waterfowl migration routes. According to this theory, certain learned responses on the part of the birds combine with purely ecological factors in building up these routes. Mr. Hochbaum will be remembered by students of waterfowl for his earlier "Canvasback on a Prairie Marsh." It is a pleasure to report that the writing style and the drawings by the author for this book have the same excellence.

THE BARREN GROUND CARIBOU OF KEEWATIN

By Francis Harper, University of Kansas, Museum of Natural History, Miscellaneous Publication #6, Lawrence, 1955. 9 x 6 in., 163 pp. Illustrated. Indexed. \$1.50.

It is impossible to read this most interesting study without thinking of the fate of the passenger pigeon. The barren ground caribou, a beautiful and appealing animal, has been seen in enormous herds performing extensive and spectacular migrations described as "hills moving with deer." It is of primary economic importance as a source of food, and clothing, and it exhibits a kind of Garden of Eden trustfulness in the presence of man. Like the passenger pigeon, it was in no danger of extinction so long as the regions it frequented were occupied only by native Indians and Eskimos. However, with the advent of so-called civilization—and firearms—its status has deteriorated steadily. For years the annual slaughter has been both excessive and wasteful. Many are the cases where hunters have set traps or killed scores of caribou, only to leave them where they fell, or keeping only the small portion required to feed their families and using part of the rest for bait or as food for dogs. The fact that the barren ground caribou population "has been reduced by something like a half during the past generation" should give us pause. As the author puts it, no

other large North American mammal "is more worthy of being cherished and safeguarded in its natural haunts for the benefit and enjoyment of future generations."

A MANUAL FOR THE IDENTIFICATION OF THE BIRDS OF MINNESOTA AND NEIGHBORING STATES

By Thomas S. Roberts, University of Minnesota Press, Minneapolis, revised edition, 1955. 9½ x 6 in., 292 pp. (xiv, 459-738). Illustrated. Indexed. Limp binding, \$3.50.

This scientific checklist gives detailed descriptions and measurements of birds occurring in the State of Minnesota. While there is no information on distribution within the state, the keys and summaries will be helpful for identification.

WILDLIFE OF THE PACIFIC NORTHWEST

By Margaret McKenny, Binford and Mort, Portland, Oregon, 1954. 8¾ x 5¼ in., 299 pp. Illustrated. \$3.00.

As an introduction to the natural history of our northwestern states—and as interesting popular reading—this book is most welcome. The title is somewhat misleading, as nearly a third of the volume is devoted to wildflowers and mushrooms, the remaining sections being about equally divided between mammals and birds, with chapters on birdhouses, baths, and feeding stations. Miss McKenny has the rare gift of imparting many facts without dryness, as readers of her "Birds in the Garden" well know. This is no doubt because she has real knowledge, lives on familiar terms with nature, and has, moreover, such genuine love for her subject that one is bound to share it. Two or three pages at the most are allotted to each of the species she has chosen to include, and comprise a description (scientific terms are omitted) and information on habits and habitats.

LOUIS AGASSIZ FUERTES: HIS LIFE BRIEFLY TOLD AND HIS CORRESPONDENCE

Edited by Mary Fuertes Boynton, Oxford University Press, N. Y., 1956. 9¾ x 6¼ in., 317 pp. Illustrated. \$7.50.

For all those who know his work, Fuertes is without question one of the outstanding bird painters of his or any time. This book will bring great satisfaction to its readers, for it is an unusual biography from which emerges a personality no less appealing than his art. How can a man be better understood than through his own words—especially when these have the gift of expressiveness and spontaneity—and the record of his dealings with acquaintances and friends? Here, linked together by the brief factual interpolations of his daughter,

ter, the events of Fuertes's life unfold as we read his letters to and from Elliott Coues, Abbott Thayer, or Frank Chapman, the day-by-day accounts of his trips for his family, and his observations on many varied subjects to numerous correspondents. Seriousness of purpose, open-mindedness, enthusiasm, candid sympathy, and a kind heart blend with a wide range of interest in things and people. It is therefore not surprising that Fuertes is remembered by so many with a vividness and affection which readers of this book will now be able to share.

THE WINDWARD ROAD: ADVENTURES OF A NATURALIST ON REMOTE CARIBBEAN SHORES

By Archie Carr, Alfred A. Knopf, N. Y., 1956. 8¾ x 5¼ in., 258 pp. Illustrated. Indexed. \$4.50.

However prejudiced one can be after playing host to a child's ill-smelling, die-hard, dime-store turtle, it is impossible not to share Professor Carr's enthusiasm for these reptiles. In the first place, the turtles of this delightful book roam in romantic scenery, and who can resist sharing the author's adventures in the sun and the blue sea, moonlight and palm trees while looking for them? In the midst of vicarious explorations one learns informally of strange plants, animals, and human customs. One senses that next to turtles, the author's happiest interests are frogs and snakes. Primarily, however, he is here concerned with the riddle of the ridley—a sea turtle which thus far has evaded any investigation of its breeding grounds, no slight feat when the amount of research that has gone on is considered. Mr. Carr is a wonderful writer, and humor abounds in his account of this Caribbean adventure.

SONG OF THE SKY

By Guy Murchie, Houghton Mifflin, Boston, 1954. 8½ x 5¾ in., 438 pp. Illustrated. Indexed. \$5.00.

For even the casual traveler, the sky is a mysterious place where beauty adds awe to a journey. For the pilot, who depends on innumerable factors for the success of his flight, signs of the invisible are to be perceived all along the way. One thus informed, whom an adventurous life has made into a writer, here communicates both his knowledge and his enthusiasm. Just as Rachel Carson

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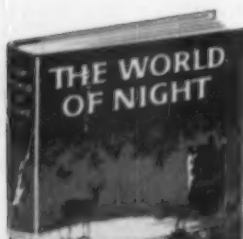
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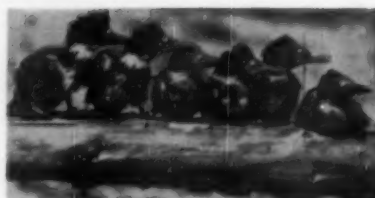
By Eugene Kinkead, Alfred A. Knopf,
New York, 1955. 8¾ x 5¾ in., 244 pp.
\$4.00.

Great scientists are generally enigmas to the layman, and the more specialized they are in their field, the more incomprehensible they seem to become. It is therefore little short of astonishing to read these penetrating "profiles," first published in the *New Yorker* and now developed into illuminating portraits. Here are biographies of three world authorities on their elected subjects: Drs. Alexander Petrunkevitch (spiders), Alexis Romanoff (bird eggs), and Roman Vichniac (microbiology), who have more in common than being native Russians, immigrant Americans, and naturalists. No doubt they must seem very "strange" to the uninformed who meet them. However, their particular "queerness" becomes understandable if one is aware of their motives and character. They are fanatics for truth, and marvel over facts with such tenderness that they simply cannot conceive of the value of theories other than as clues for investigation. Their admirable simplicity and modesty are, of course, the outcome of this basic intellectual integrity. What lovable human beings they truly are! Mr. Kinkead's talent makes them live and act before us, and allows us to take a few steps into their wonderful world. With light-hearted seriousness, he makes his readers not only conscious of the greatness of these men, but also of the beauties of creation. This is the kind of knowledge which somehow makes life still more worth while.

DE VOGELS VAN DE NEDERLANDSE ANTILLEN: BIRDS OF THE NETHERLANDS ANTILLES

By K. H. Voous (Fauna Nederlandse Antillen #1). Curacao. Natuurwetenschappelijke Werkgroep Nederlandse Antillen, 1955. 8 x 5½ in., 204 pp. Illustrated. Indexed. 16 Dutch guilders (about \$4.50). (Available through Martinus Nijhoff, N. V., 9 Lange Voorhout, The Hague, Netherlands.)

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on the lining papers, and especially numerous colored plates and black and white photographs, are further helps for identifying birds of these islands.

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BIRD ATTRACTING—Continued from Page 135
worked carrying Jane's walnuts into his den.

One morning in autumn, Naomi called for Jane and me to come to the kitchen window. We looked out and there was a pretty little ground squirrel with a long bushy tail alongside Chippie, the bob-tailed one. We called Chippie's mate, Chipperina. This summer they had two little Chippies. I heard something in the big tile under our house that was crying like a lost bird. I followed the sound, looked in the tile, and I didn't see a thing. Then I stretched out above the tile and peeped down. I heard the crying again, and then I saw their first little Chippie, only a little larger than a brown woodmouse. But while I looked down through the tile, Chippie and Chipperina came running to him and he followed them back to their slick-worn hole, down into the rockwall which was their den. Sometimes, Chippie and Chipperina and their two little Chippies, climb the smokehouse wall, get into the feedbox, and eat with the birds. There are so many mouths to feed now that we don't have enough crumbs from our table and so I buy feed for them.

One winter afternoon, Birchfield, our cocker spaniel, was barking in the backyard. We looked through the kitchen window and saw one of our 'possums had come back, but he had only three legs. He had lost a foreleg in a trap. He was eating Birch's canned rations and our cocker didn't like it. When Birch approached him, trying to be friendly, the 'possum bit Birch on the nose and sent him whining back to the house. We threw bread to the 'possum and he'd pick up a piece and take it under the smokehouse to eat it. He ate four pieces and the fifth he carried away. I followed him to see where he was living, and saw him go into the tile under our front yard. Finally, he went to the woods, got himself a mate and came back to the tile. We have five 'possums now. The 'possums never bother us, except Naomi can't set out a bowl of food for them. We discovered that they carry the bowl away after they eat the food.

I have never liked mice, so I set a trap in my pumphouse when I noticed where one had been. I have always been sorry for this, because I caught a beautiful brown woodmouse. I never set another trap for them. Soon, I had four of them and now, when I go to the pumphouse, they sit in their nests and look down at me. I let them alone and they have become pets. They are larger than

other mice; they have long pointed ears and large brown eyes.

This past summer we counted 17 species of birds with about 40 nests, in the trees, shrubs and vines in our yard, and in boxes, and baskets in the utility room, garage, and smokehouse. At the time we counted the birds, we saw Grayball (the three-legged 'possum) with his mate and three young going to scraps we left for them. Three wild rabbits were in the yard eating clover. Four ground squirrels were sitting on the rock wall, washing their faces.

In the winter here, when snows are deep and food is scarce, we add more animals to our family. The quails come in and we feed them; the gray squirrels and fox squirrels come to be fed, and snowbirds or juncos, come by the dozens. And we always have the redbirds. One valley not far from our house is called Red Bird Hollow because there are so many redbirds there in the winter. Our Peter and Lucy, in the last 14 years, may have been the progenitors of these birds. Their offspring have multiplied by the dozens and they do not move too far away because I think they know when food is scarce they can get it here. Our redbirds are so tame they will almost alight on our shoulders. We protect wildlife, and so we do not know how large our animal family will increase in time to come, but they are welcome. They have educated us in their ways of life and in their struggles for survival. May their tribes increase.—THE END

URGENT NEED FOR DOVE BANDING

The U.S. Fish and Wildlife Service is faced with a lack of specific information needed in its management planning to assure adequate protection of the mourning dove. The only remedy will be a great increase in dove banding definitely associated with nesting areas over the entire breeding range. To achieve this, much additional help is needed. Although only persons with banding permits may actually place the bands on these birds, all who are interested may be of great assistance in finding nests and reporting the presence of nestlings to people who have bird-banding permits.—The Editor



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Children's Books

By Dorothy Edwards Shuttlesworth



Two third-graders who attended different schools were talking over their respective school work. "We're studying about stars and planets," reported one with obvious pride. "Oh," replied the other, "We've learned all about them. 'We're on animals now.'"

It was with difficulty the eavesdropping adult refrained from interrupting at this point to try to learn just what, in a nine-year-old mind, constituted complete knowledge of our solar system and the galaxies beyond. She also wondered if the attitude expressed was chiefly the exuberant boastfulness of youth or if it actually revealed a feeling of "that's all there is to that."

The latter point of view, unfortunately, sometimes is fostered by uninspired teaching methods or the manner in which a subject is presented in a book—perhaps forcefully and accurately, but without stimulating further thought. Happily today books of this type are decidedly in the minority. In the main, nature and natural history are treated in a manner that captures the imagination and develops a spirit of inquiry rather than being mere catalogs of information. Parents and teachers, as well as the children who read them, may well feel grateful for the superior nature books that publishers are making available.

Numerals after titles indicate age groups.

ANIMAL CLOTHING (10 and up)

By George F. Mason, William Morrow & Company, New York, 1955. 8¼ x 5¼ in., 94 pp. Illustrated by the author. \$2.00.

Young people who have more than a casual interest in animals are fortunate to have available such a book as "Animal Clothing." It discusses in detail the various protective coverings given by nature to countless living creatures: the fur of mammals, feathers of birds, scales of reptiles, skins of amphibians, shells of crustaceans, and the bony outer covering of insects. A wealth of unusual and enlightening information about well-known creatures is included and, as in Mr. Mason's earlier books, accurate and distinctive drawings contribute greatly to this volume's popular appeal.

INDIAN SIGN LANGUAGE (10 and up)

By Robert Hofsinde (Gray-Wolf), William Morrow & Company, New York, 1956. 8¼ x 5¼ in., 96 pp. Illustrated by the author. \$2.50.

A child whose conception of the American Indian's vocabulary is a restrained "Ugh" or "How!" will peruse this fascinating book with astonishment. More enlightened youngsters also should find its contents endlessly intriguing. With concise text and numerous illustrations Mr. Hofsinde explains more

than 500 words in Indian sign language, and shows how to form them. A brief introduction relates why, in addition to the spoken word, this means of communication was necessary not only to the earliest Americans but to the first white adventurers and trappers. Besides being a source of entertainment this book can be the basis of an unusual hobby: learning to talk with fingers in the Indian manner. The author has the distinction of being a Danish "Indian," having come to the United States from Denmark as a young man and being made a blood-brother of the Chippewa after he had saved the life of a boy of that tribe.

REINDEER RESCUE (10-14)

By Stella F. Rapaport, G. P. Putnam's Sons, New York, 1955. 8¼ x 6¼ in., 120 pp. Illustrated by the author. \$2.50.

A corking good story is this, and especially inspiring because it is based on a true rescue expedition that took place more than 50 years ago. It was the winter of 1897 when a whaling fleet from the United States was caught in an ice pack off Alaska. A rescue party taken by ship to Cape Vancouver in the Bering Sea, went by dog sled to Cape Prince of Wales where the Eskimos with great self-sacrifice gave them two reindeer herds to be taken to the marooned whalers. The men then started "over a

route seldom traveled before even by dog sleds, with a herd of over 400 reindeer to drive and care for . . . pushed their way through impassable obstacles, across frozen seas, over snow-clad mountains with tireless energy." (The quotation is from an official report of the U. S. government.) To the small group of men, Mrs. Rapaport adds Ahtok, an Eskimo boy, who contributes reindeer and who makes the long trek with the Americans. Her story is told with real drama and it includes many details that vividly bring to life the Alaskan Eskimo and their domesticated reindeer.

HURRICANES AND TWISTERS (12 and up)

By Robert Irving, Alfred A. Knopf, New York, 1955. 8¼ x 6¼. 147 pp. Illustrated by Ruth Adler and with photographs. \$2.50.

The numerous violent storms that have devastated various parts of the United States in recent years have awakened a keen interest in the fantastic winds known as a hurricane. Here is a timely and valuable book which explains many technicalities of hurricanes and twisters, as well as such intriguing matters as how the custom was started of christening hurricanes with girls' names, and the origin of the word "hurricane." It also emphasizes a point (most important for young people to realize) that although meteorologists have learned much about the behavior of these storms, much more research is necessary for a complete understanding of them. As Ernest Christie, meteorologist of the U. S. Weather Bureau writes in the foreword, "The facts presented here will serve well to plant the seeds of knowledge in the minds of people so that they will be in a better position to take action when confronted with the threat of a hurricane or a tornado."

We Were There

WITH BYRD AT THE SOUTH POLE (10-14)

By Charles S. Strong, Grosset and Dunlap, New York, N. Y., 1956. 9¼ x 6¼ in., 176 pp. Illustrated by Graham Kaye. \$1.95.

With the 1956 explorations at the South Pole in the news this book is of exceptional interest, although it would strongly attract an adventure-loving youngster at any time. Though written as a fiction story, the 14-year-old "hero" is signed as radio cadet on a ship that was part of Admiral Byrd's 1928 expedition to the Antarctic, and the story is based upon true historic events. In fact it was checked for accuracy by none other than Col. Bernt Balchen who, as a member of that historic expedition, piloted the plane which took Admiral Byrd and others on the first flight ever made over the South Pole. A generous number of lively illustrations added to the exciting subject matter make "With

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Byrd at the South Pole" quite irresistible to young teen-agers. For their parents it may revive the excitement they knew as children when news of the establishment of Little America came from the "bottom of the world."

FISH AND WILDLIFE (10 and up) PARK RANGER TALL TIMBER

By C. B. Colby, Coward-McCann, Inc.,
New York City, 1955. 10 3/4 x 7 1/2 in., 48
pp. Illustrated with photographs. \$2.00.

These three books (each an entirely separate volume) are part of an attractive new series. Well designed to catch the eyes and interest of young people, they present the conservation story in a unique and effective manner. "Fish and Wildlife" depicts the work of the United States Fish and Wildlife Service. "Tall Timber" deals with the work, machines, and men of our country's Forest Service. "Park Ranger" recounts some of the activities, thrills, and equipment of the National Park Rangers. Each is essentially a picture book with a large portion of every page devoted to one or more photographs. However, by extensive captions and well-written foreword, Mr. Colby points up not only the beauty and natural wealth of our country, but the need for protecting our resources and how our government agencies function to achieve this protection.

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sure, can stick to wise practices and principles. Governmental agencies appear to be increasingly less able to do so.

Therefore, inasmuch as, under our form of government, the administrative and legislation arms are almost inevitably at loggerheads, under any set of circumstances, it would seem to us highly desirable that there now be legislation so restricting the power of the Department of the Interior and of its Fish and Wildlife Service that it could not execute a mineral lease on a national wildlife refuge, or dispose of or transfer any part of any one of them, without the prior consent of Congress.

Hawk and Owl Protection

The Audubon Society of Canada has taken a leading part, with the full cooperation of the Federation of Ontario Naturalists, the Ontario Federation of Anglers and Hunters, and the Conservation Council of Ontario, in obtaining approval and recommendation of the Fish and Game Committee of the Ontario Legislature with regard to legislation providing that all hawks and owls in Ontario be legally protected. The essence of the recommendation is "In Ontario every hawk and owl should be protected, except that the owner of poultry or other domestic animals and the members of his immediate household, and his bona-fide employee may destroy by shooting any hawk or owl which is doing real damage to the said poultry or other domestic animals."

In the normal process of legislative procedure, final action in this matter may not be reached until next fall.

Wilderness Preservation

There is a measure under consideration that would establish a National Wilderness Preservation System, and would include therein designated national parks and monuments, roadless, wild and wilderness areas in national forests, national wildlife refuges, and roadless and wild areas on Indian Reservations. It has not yet been put in the legislative hopper or assigned a number.

Nevertheless, in an official release of the Bureau of Land Management of the Department of Interior dated March 9, it is stated that the Assis-

tant Secretary of the Interior responsible for supervision of the activities of the National Park Service, the Fish and Wildlife Service, the Bureau of Indian Affairs, and the Bureau of Land Management, in addressing the National Advisory Board Council for Grazing "warned the Council of the imminence of proposed legislation which would prohibit grazing and mining in wilderness areas and wildlife refuges" and called it "a serious threat to grazing in the western states."

This Summer's Camps

The Audubon Camps of California, Maine, and Wisconsin will again stage five two-week sessions for adults from mid or late June to early September, and the present status of enrollments indicates that all will operate at full capacity. The lodging facilities for students at the Audubon Camp of Connecticut are in such great need of substantial improvement that it has been decided to skip a year in the conduct of that camp, while new and adequate facilities are under construction, with an eye to their use beginning in the summer season of 1957.

Summer Tours in Florida

As has been the case for quite a few years, tours to the Duck Rock Sanctuary off the southwest Florida coast will be conducted by your Society from mid-June to late August. The spectacle afforded by the great flights of ibis, egrets, herons, and spoonbills, congregating each evening in summertime on this small mangrove key, is one of the thrilling sights of the avian world.

This year there will be two such tours each week, and with one of them will be combined a second-day visit to the new Corkscrew Swamp Sanctuary. Enrollment in these tours may be made through either Audubon House or the Miami Office of the Society at 13 McAllister Arcade.

INVITATION FROM AUSTRALIA

Do any of your members contemplate coming to Australia during the Olympic Games in 1956? If so, they may like to let us know beforehand, and we could arrange something of interest for them. Our members would be most happy to meet them, and to show them places and things likely to appeal to them. For further information, write to: Gordon Binna, General Secretary, Royal Australasian Ornithologists Union, 386 Flinders Lane, Melbourne, C. 1, Australia.

Your CHILDREN

By Shirley Miller

Recently John Terres, the editor of this magazine, received a letter from Linda J. Basil, age seven, of Annapolis, Maryland, in which she enclosed a story she had written for her grade-school teacher. Linda introduced herself by telling us, "I am in the fourth grade. I like to read, spell, and do social studies. I love horses and believe in being kind to all animals. When I see someone being mean to an animal, I get very mad." We are printing her story just as she sent it to us, because we feel that you will enjoy it as much as we did, and believe that you might like to encourage your children to use Linda's technique in story-telling.

My Adventures As a Fir Tree by Linda J. Basil

"One day a man was walking down the path that goes through the woods. He was carrying a big bag. A hole was in the bag and some seeds were falling. One seed fell on the side of the path. That seed started my life.

"When I came up out of the ground, I was a very little fir tree, but I was happy. One day some men came to the woods, and were looking for something. I watched them for quite a while and then I saw them cut down a very big tree; and they put it on a sled and pulled it away. I saw more and more men coming and they all did the same thing. Then it started to get dark and cold.

"Year after year I grew taller and taller until I was cut down like the other trees were and put on a sled and pulled away. They put me in a big room and put a lot of pretty things on me. I was very, very happy then! That whole night I just could not wait till the next morning! At last morning came! The family came downstairs and lit my lights! They opened boxes and more boxes. Then they went out of the door and took their new things.

"Suddenly, I heard a very loud noise. I looked out of the window and I saw a funny thing. It had four wheels, with chains, a door on each side, six windows and a body that looked like a house. The people got inside of it and went away. At last they came home. It was dark when they did. They went upstairs and I do not know what they did but still I could hear them. I could hear water running just as I did in the woods. I could hear the splishing and splashing

in the water. Pretty soon, I could hear some squeaking which sounded like mice.

"The next day came at last! The family came downstairs but this time they did not open boxes. All they did was to pick me up and throw me outside! For weeks nobody paid any attention to me. But one day the man of the family picked me up and carried me away! At last, I thought, they are going to put pretty things on me again. But

all they did was to throw me on the ground again. They lighted me with bright gleaming fire! And all I was after that was ashes."

We believe the readers of this column will agree that Linda's technique is an inspiring one, which the children in your home or school would enjoy using. Countless titles suggest themselves—"I Am a Bridge," "My Life As a Hummingbird," "My Adventures as a River," "What I Did When I Was an Owl," and

"How It Feels To Be a Fox." Some of these titles might teach children who write a "story" about the subject, something about conservation—what happens to rainfall when it is unchecked on the land, what a fox or any other predator eats, and what this means to the animal community in which it lives. But let your children think up their own titles, as well as write their own stories. Your main role is to be their enthusiastic audience.

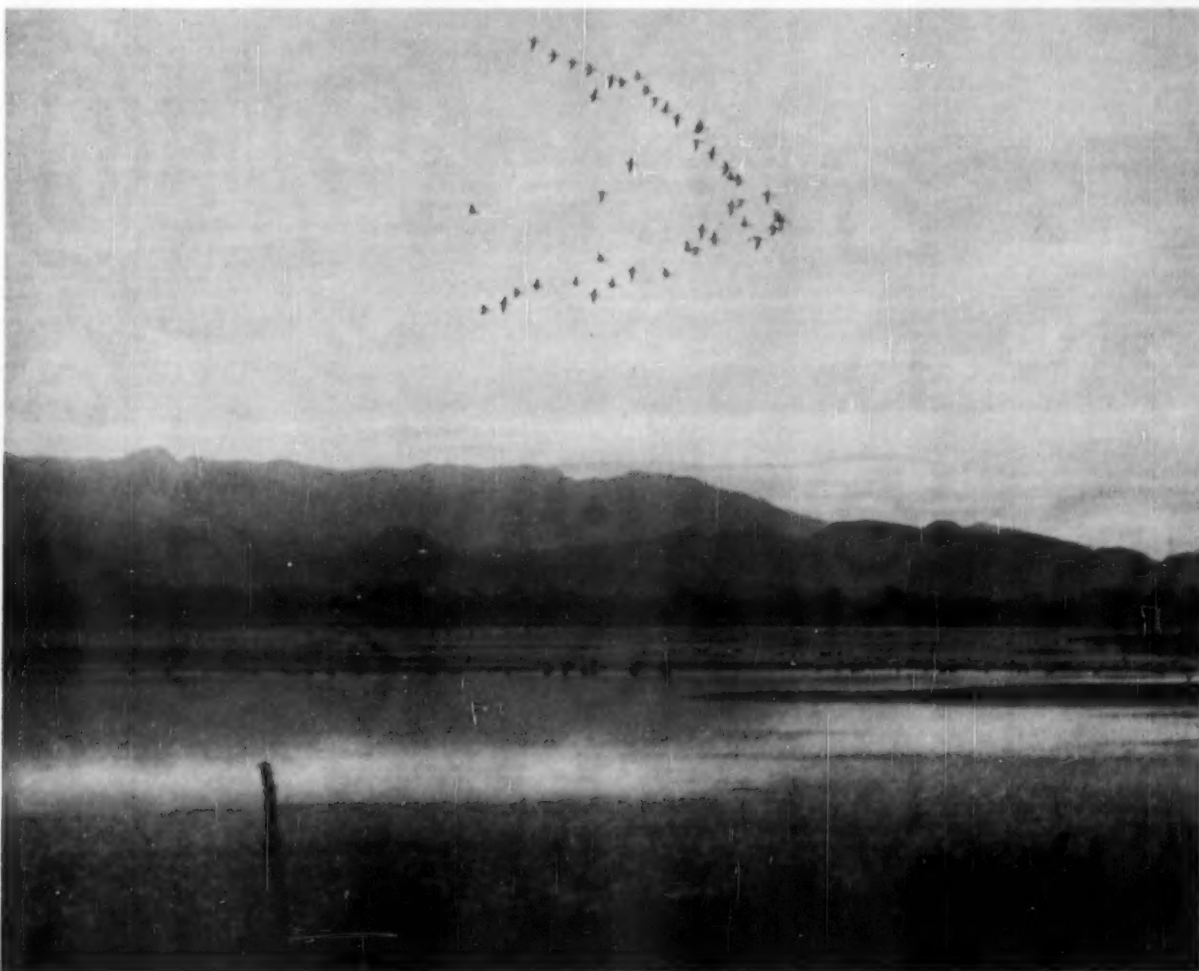
—THE END

CAN CARTEGENA LAGOON BE SAVED?

In April 1955, Dr. James B. McCandless, Hospital Bella Vista, Mayaguez, Puerto Rico, with the cooperation of the National Audubon Society, called attention of the U.S. Fish and Wildlife Service to the plans of the Puerto Rican government to drain Cartegena Lagoon. The lagoon, in southwestern Puerto Rico, is the last remaining fresh water area there of its kind, and was temporarily given a "stay of execution," because of the interest shown in saving it as a wildlife refuge. Cartegena Lagoon is also the last good breeding place remain-

ing for waterfowl in all Puerto Rico. Dr. McCandless has recently written to the National Audubon Society, as follows: "While the final decision on Cartegena Lagoon is presently being considered, I feel that timely expression of interest on the part of respected organizations and scientists in the United States would go far toward saving this last important fresh water habitat in Puerto Rico. Letters should be addressed to the Commonwealth Planning Board or the Governor at San Juan."

Photograph of Cartegena Lagoon by Luis Casanova



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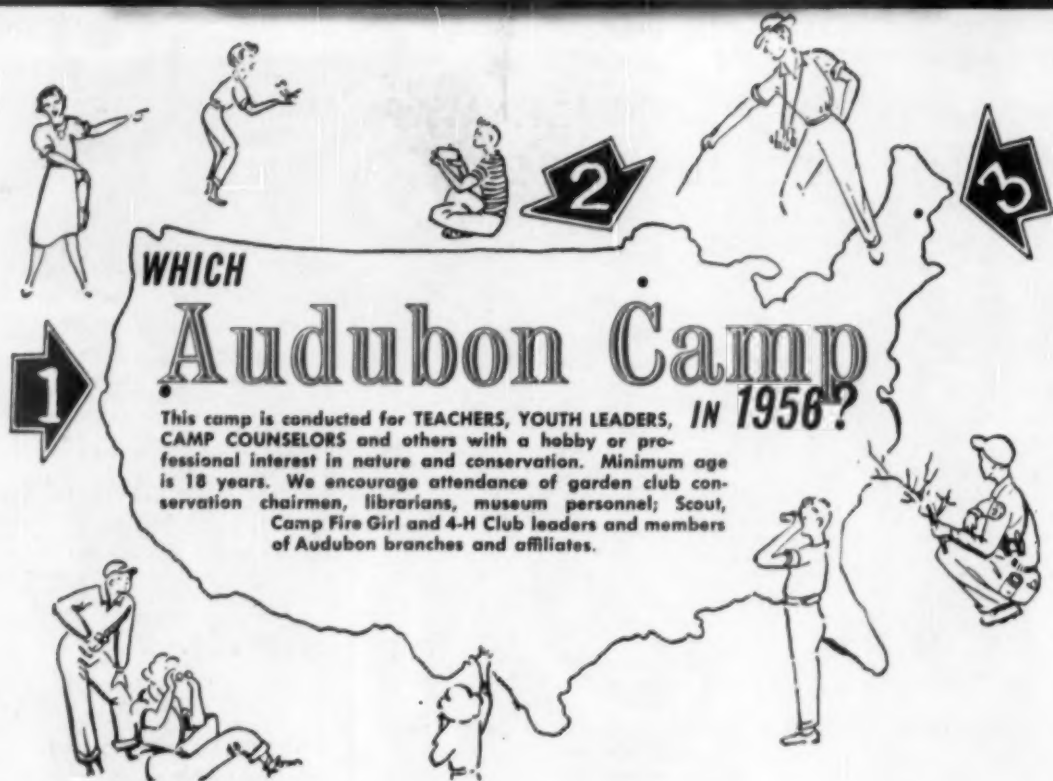
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CALIFORNIA?

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Five two-week sessions in 1956—\$95 per session:

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Five two-week sessions in 1956—\$95 per session:

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MAINE?

On a picturesque wooded island in Muscongus Bay, overlooking the Atlantic Ocean and 65 miles northeast of Portland, is the Todd Wildlife Sanctuary, site of the Audubon Camp of Maine. Here campers explore the 330-acre evergreen island; journey by camp boats to oceanic islands to view thousands upon thousands of nesting gulls and cormorants; again by camp boat cruise along the thrilling Maine shoreline or journey to the mainland for explorations in hardwood forests, fresh water ponds and meadows.

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sultation with instructors. Daily association with people of kindred interests from all over the country is a delightful feature.

Picnics, campfires, songs, swimming, nature movies and slides afford a variety of entertainment. Intervals for rest and relaxation during the day offer time to wander on one's own, converse or take a nap. Each camp has a well-equipped nature library and camp store.

FOR RESERVATIONS AND INFORMATION WRITE TO

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